Markay Chemicals
St. Albans, Kanawha County, West Virginia

SITE INSPECTION REASSESSMENT REPORT

TRIAD Project 01-06-0599

Submitted to:

West Virginia Department of Environmental Protection
Office of Environmental Remediation
601 57th Street
Charleston, West Virginia 25304

Submitted by:

TRIAD ENGINEERING, INC.
St. Albans, West Virginia

November 2007

ORIGINAL

CIVIL • ENVIRONMENTAL
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TRIAD ENGINEERING, INC.

November 21, 2007

Mr. James Hargett
Site Assessment Manager
USEPA, Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

SUBJECT: ***SITE INSPECTION REASSESSMENT REPORT***
Markay Chemicals CERCLIS Site
CERCLIS No. WVD054116645
TRIAD Project No. 01-06-0599

Dear Mr. Hargett,

TRIAD ENGINEERING, INC. is pleased to submit the *Site Inspection Reassessment Report* for the Markay Chemicals CERCLIS Site, prepared under Task 3 of the approved Work Plan.

If you have any questions or desire additional information, please feel free to contact us.

Sincerely,
TRIAD ENGINEERING, INC.

Jennifer L. Welch
Staff Environmental Scientist

Heather A. Napier
Project Manager/Environmental Scientist

Gregory E. Tieman, P.G., L.R.S.
Environmental Services Manager

Cc: Pamela Hayes (WVDEP, OER Project Manager)

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

ACRONYM GLOSSARY

ATSDR	Agency for Toxic Substance and Disease Registry
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CLP	Contract Laboratory Program
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
CRDL	Contract Required Detection Limit
DQO	Data Quality Objective
DWR	Division of Water Resources
EP Tox	Extraction Procedure Toxicity
FORMS II Lite	Field Operations and Records Management System
FSP	Field Sampling Plan
HASP	Health and Safety Plan
HRS	Hazard Ranking System
KAP	KAP Technologies Inc.
MS/DUP	Inorganic Matrix Spike/Matrix Duplicate
MS/MSD	Organic Matrix Spike/Matrix Spike Duplicate
NFRAP	No Further Remedial Action Planned
NPL	National Priority List
NWI	National Wetland Inventory
OER	Office of Environmental Remediation
OWM	Office of Waste Management
ppm	part per million
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAGS	Risk-Assessment Guidance for Superfund
RAS	Routine Analytical Services
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SCS	Soil Conservation Service
SDG	Sample Delivery Group
SENTIN	Sentinel, Inc.
SIR	Site Inspection Reassessment
SOW	Statement of Work
SVOC	Semi-volatile organic compound
TAL	Target Analyte List
TAT	Technical Assistance Team
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TDL	Target distance limit

ACRONYM GLOSSARY, Continued

TRIAD	TRIAD ENGINEERING, INC.
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
VRRDA	West Virginia Voluntary Remediation and Redevelopment Act
WVDEP	West Virginia Department of Environmental Protection
WVDHHR	West Virginia Department of Health & Human Resources
WVDNR	West Virginia Department of Natural Resources

1.0 INTRODUCTION

TRIAD ENGINEERING, INC. (TRIAD) has prepared this *Site Inspection Reassessment* report (*SIR*) for the United States Environmental Protection Agency, Region III (USEPA) and the West Virginia Department of Environmental Protection (WVDEP), Office of Environmental Remediation (OER). This report has been prepared under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1988 (SARA) under a Pre-Remedial Cooperative Agreement between the USEPA and the WVDEP.

The Markay Chemicals CERCLIS Site (the Site) has Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) site designation WVD054116645. The Site is not on the National Priorities List (NPL), and the current CERCLIS status is archived, with a "No Further Remedial Action Planned" (NFRAP) designation. The USEPA and WVDEP, OER determined a Site Inspection Reassessment (SIR) was warranted to assess potential risk associated with the Site and determined the Site should undergo further investigation under CERCLA. This *SIR* has been prepared under Task 3 of the approved Work Plan, WVDEP, OER Contract DEP13517.

Prior to preparing this *SIR* report, TRIAD performed various work tasks under the approved Work Plan relative to the Markay Chemicals CERCLIS Site, including preparing the following deliverables for the USEPA and WVDEP, OER:

- *Conflict of Interest* disclosure as per the requirements of 40 CFR Part 35.6550 (Subpart O), submitted December 28, 2006.
- *Sampling and Analysis Plan* (*SAP*), which included a *Field Sampling Plan* (*FSP*) and a *Quality Assurance Project Plan* (*QAPP*), submitted April 5, 2007.
- *Health and Safety Plan* (*HASP*), submitted April 5, 2007.
- *Site Inspection Reassessment Field Sampling Activities Report* at the conclusion of the field investigations, submitted August 3, 2007.

In addition to these deliverables, OER requested that TRIAD perform a preliminary screening-level risk assessment to assess potential risk associated with the Markay Chemicals CERCLIS Site. This preliminary screening-level assessment includes the following work tasks:

- Identifying contaminants of potential concern (COPCs) and then selecting contaminants of concern (COCs).
- Identifying areas of potential environmental concern, contaminant migration pathways, and potential human health and ecological receptors.
- Preparing this *SIR* report, which includes performing a preliminary Hazard Ranking System (HRS) evaluation using the USEPA Quickscore version 2.3 computer model, and providing recommendations.

ORIGINAL

2.0 SITE DESCRIPTION AND HISTORY

2.1 Site Location

The Markay Chemicals CERCLIS Site is located in a residential area at 302 MacCorkle Avenue in St. Albans, Kanawha County, West Virginia. Coordinates for the Site are 38° 23' 39.39" north latitude and 81° 50' 38.41" west longitude. The Site location is depicted on the *St. Albans, W.Va.* 7.5-minute United States Geological Survey (USGS) topographic quadrangle map depicted below on **Figure 1, *Site Location Map*.**

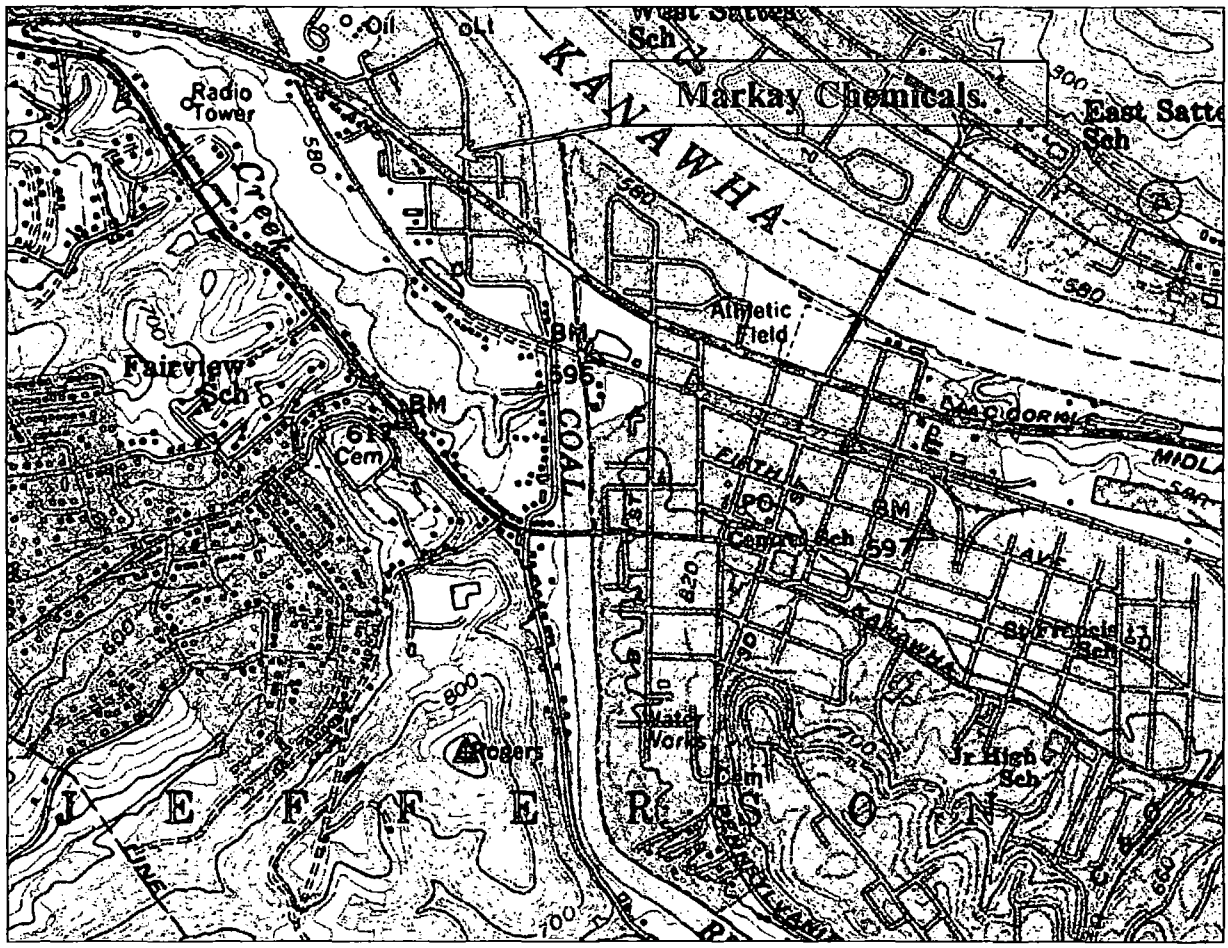


Figure 1, Site Location Map
USGS, 1976

2.2 Site Description

The Site is relatively flat lying with a small slope to the northern side which leads to a drainage ditch on the adjacent residential property. Two connected structures are located at the Site, and the Site is surrounded by a chain link fence. In addition, the Site is located within the 100-year floodplain of the Kanawha River. Current Site and surrounding area features are depicted on the attached aerial photograph obtained from Google Earth ® as **Figure 2, *2006 Aerial Photograph*.**

2.3 Ownership Information and Potentially Responsible Parties

The Markay Chemicals Site encompasses two tax parcels identified on the Kanawha County, Jefferson District 16, Tax Map 3M as parcels 137 and 138. Parcel 137 has been owned by the Shaheen family since 1970 and parcel 138 is currently owned by RoJo Properties, LLC, who purchased the property from Lillian Shaheen in November 2005. In addition, the Site has also been known as Kleen-Way Industries and Tornado Products, Inc. Potentially Responsible Parties include the following:

- Charles W. Shaheen (Markay Chemicals);
- Lee Roberts (Tornado Products, Inc.);
- Rojo Properties, LLC (Tornado Products, Inc.).

2.4 Operational Activities

Based on information available in the project file, the Markay Chemicals Site was operated by several businesses. The following is a summary of operational activities, in chronological order:

- Prior to 1970 a gas station operated at the Site. The gas station left behind two 5,000-gallon underground storage tanks (USTs).
- Markay Chemicals manufactured various industrial detergents, cleansers and degreasers. The exact date Markay Chemicals began operation is unknown; however, it was owned by the Shaheen family from 1970 and operated until sometime after September 1993. The Shaheen family owned the property until selling it to Rojo Properties, LLC in November 2005.
- Kleen-Way Industries manufactured industrial soaps, drilling foams and de-icers and merged with Markay Chemicals in March 1989.
- Tornado Products, Inc. currently operates at the Site and manufactures industrial cleaning products. Charles W. Shaheen leased the property to Lee Roberts, the owner of Tornado Products. It was sold by Lillian Shaheen in November 2005 to the current owner of Tornado Products, Rojo Properties, LLC.

2.5 Historical Site Investigations and Remedial Activities

The USEPA and WVDEP, OER project files indicate that site investigations and remedial activities have been performed at the Markay Chemicals Site since its discovery in September 1980. The following is a summary, in chronological order, of pertinent information obtained from the USEPA and WVDEP, OER project files:

September 16, 1980 – The West Virginia Division of Water Resources (DWR) performed a Site Inspection. The following information was noted:

- The Site was owned by Charles W. Shaheen.
- Markay Chemicals manufactured and sold drilling foam for the oil and gas industry.
- Labeled drums of the following were observed: diethylene glycol, ethylene glycol, alipal, 1, 1, 1, trichloroethene, methyl-ethyl ketone (MEK), drilling foam, carbo wax and several drums with only "flammable" labels.

- A floor drain was located in the center of the warehouse and manufacturing area. The drain led to a low area outside the building which was referred to as the "pond" by company officials.
- The "pond" had reportedly been in use for approximately seven years.
- 25 to 35 drums were observed along the fence line of the property. Some drums were leaking; others had open tops; while several were in various stages of decomposition. Evidence of runoff from the drum storage area was observed.
- The facility "is polluting and needs major remedial work to correct present problems."

January 28, 1981 - The DWR performed a Site Inspection. The following information was noted:

- The area was fenced and drums were stacked as high as the fence. Many were rusted, dirty, and had placards stating the contents were flammable and corrosive.
- The owner indicated they "purchased raw materials from other companies and mixed them to produce product." They mainly mixed soaps, drilling foams, degreasers, and de-icers.
- The facility contained various sized tanks. If spillage occurred the chemicals were reportedly diluted with water and washed down a drain which discharged to the Coal River.
- The owner reported that the outside drums were empty and were not rinsed out onto the ground. The product created in the facility was placed into the raw materials drums.
- Water was standing in the low area to the left of the building. The area was covered with green plastic bottles and household trash.
- The stormwater ditch behind the property had a small area of ponded water (approximately 2 feet x 3 feet) at the left rear corner of the building.
- A concrete drain pipe protruded from the building and discharged into the ditch. No discharge was occurring at the time of inspection. However, a small area of opaque, greenish ponded water (approximately one foot in diameter) was present at the pipe outlet.
- Two areas, where surface discharge was seeping from drums were observed on the right side of the building. Evidence on the ground showed that at times the discharge had flowed into the ditch at the rear of the building. The largest discharge was a black liquid with an oily sheen.

March 17, 1981 – A Site Investigation and Trip Summary Report was prepared by the DWR. The following information was noted:

- The company mixed chemicals to produce cleaning compounds.
- Spilled materials and washings discharged into a drain in the center of the work area and drained outside onto the ground.
- Recommendations included general site cleanup, waste control, proper treatment, proper disposal, runoff control, and a workable spill contingency plan.
- Three water samples and two soil samples were collected from the Site and an

additional sample was collected to perform a bioassay test.

- Laboratory analytical results indicated detected concentrations of carbon tetrachloride, trichloroethene, methylene chloride, chlorobenzene, chloroform, and 1,2-dichloropropane.
- The bioassay results, using a sample from the ditch into the "pond," were "very toxic" to *Daphnia pulex* at all dilutions over twenty-four hours.

April 6, 1981 – The West Virginia Department of Natural Resources (WVDNR) completed a Potential Hazardous Waste Site Identification following a site inspection. The following information was noted:

- The facility mixed and sold cleaning agents.
- The Site was an old service station located in a residential area along a major highway. A school was also located nearby.
- The Site contained drums stacked three high inside a chain-linked fence, many were in poor condition. Some were leaking onto the ground with no runoff control.
- The "pond" was not lined.
- Known wastes included 1, 1, 1-trichloroethane, MEK, methanol.

May 11, 1981 – The WVDNR completed a Potential Hazardous Waste Site Identification following a site inspection. The following information was noted:

- The Site was located in a populated residential and business area adjacent to a heavily used road.
- "The company used toxic and hazardous chemicals. In case of spill the chemicals were discharged into a drain and eventually soaked into the ground on the side of the building."

October 8, 1981 – Ecology And Environment, Inc. completed a Site Inspection. The following information was noted:

- The majority of on-site products were cleaning agents.
- There were no wastes transported from the Site.
- The result of the organic vapor analysis adjacent to the process tanks was 500 ppm above background.
- Samples were collected of waste, runoff, spill material, and soil. 1,2-Dichloropropane, Carbon tetrachloride, Trichloroethene, Chloroform, Dichloromethane, and Chlorobenzene were detected at the Site.
- Wastes were discharged from the process building through a floor drain onto the ground creating an unlined waste "pond." The size was approximately 10 yards x 15 yards.
- Strong odors were evident within the fence area. Odors were also evident from the street approximately 15 feet from the fenced area.
- There was extreme contamination of soil in the waste pond area and other areas of spillage.

- Spills were abundant, emanating from leaking containers in the process building and migrating from the Site.
- Parks and schools were located ¼ mile or greater from the Site.
- The drinking water supply was approximately 0.7 mile to the south and upgradient of the Site.

November 18, 1981 - WVDNR completed a Potential Hazardous Waste Site Tentative Disposition. The following information was noted:

- The company produced cleaning products and was located in a residential area. Analysis of water and soil samples taken from the site found high concentrations of methylene chloride, chloroform, and carbon tetrachloride.
- Several drums labeled as hazardous wastes were stacked on site and some showed signs of leaking.
- Enforcement was recommended.
- Spillage of hazardous materials was collected in a small unlined "pond" adjacent to the plant building. The extent of soil contamination was unknown.
- WVDNR recommended drums that contained waste and were leaking needed proper storage. Drums that contained ignitable wastes needed to be segregated. Contaminated soil and wastes should be removed from the "pond" and it be lined.

April 28, 1982 – The DNR issued Order No. 852 relating to the disposal of hazardous wastes at the facility. Based on the Order, Markay Chemicals was to comply with the following:

- Cease immediately upon receipt of the Order: 1) the release of hazardous wastes into the disposal pit and 2) the release of spillage of all hazardous wastes outside the facility perimeter.
- Collect and properly contain all hazardous wastes spilled on-site or off-site of the facility.
- Remove all hazardous wastes and hazardous waste residues from the disposal pit area and from the affected ditch.
- Submit to the Chief a plan detailing the methods to be used to comply with the Order. The plan was to include the methods for excavation, containment, and disposal of the contaminated soils and residues.

May 21, 1982 – Correspondence from Markay Chemicals Company to DNR in reference to Order No. 852. Markay Chemicals indicated the following:

- Containers were installed under each raw material container valve, thereby stopping leakage.
- All inadvertent spills were anticipated to be immediately picked up with absorbent, placed into a container, and shipped via certified hazardous waste disposal contractor to a certified hazardous waste disposal site.
- Spillage outside of the facility was corrected by limiting storage to only empty drums and finished products ready for shipment.

- The floor drain in the main building was sealed with a "thick layer of concrete."
- The "tile to waste pit" was cut and plugged with concrete.
- Spillage around tanks, drums, and mixing vats was cleaned with absorbent and put into containers.
- A dike was in the process of being installed around the inside perimeter of the main building to prevent a major spill from migrating out of the building.
- Hazardous wastes from the disposal pit drainage ditch, and the disposal pit would be closed.
- BCM Laboratories would sample the affected areas.
- The contaminated soil would be removed, placed into an approved container and shipped by a certified contractor to a certified hazardous waste disposal facility.
- The fence at the southwest corner of the building would be repaired to prevent unauthorized entry.
- Off-site spillage had ended and would be cleaned as described above.

July 1, 1982 – The BCM Laboratory Division prepared a Proposal for Soil Sampling and Analysis. The following information was noted:

- Samples would be collected from between the disposal pit and the MacCorkle Avenue embankment at the surface at depths of one, three, and five feet bgs. Samples would be collected from the low area at western corner of property boundary and from the ditch thealong property boundary at the rear of building at depths of one, two, and three feet bgs. Samples would be collected from between the eastern property boundary and Oliver Street at the surface and at depths of, one and two feet bgs.
- Samples would be analyzed for methylene chloride, ethylbenzene, toluene, 2-chloronaphthalene, bis (2-ethyl hexyl) phthalate, phenol, toluene, and 2-chloronaphthalene,

July 20, 1982 – Ecology And Environment, Inc prepared a Hazard Ranking System Site score for the Markay Chemicals Site. A Site score of 20.09 was calculated with the groundwater and air pathways being the pathways of concern driving the score. In addition, the following information was noted:

- The Groundwater pathway score was 3.28.
- The Surface Water pathway score was 0.00.
- The Air Route pathway score was 34.61.
- The Migration Hazard Mode score was 20.09.
- The Fire and Explosion pathway score was 0.00.
- The Direct Contact pathway score was 62.50.
- The waste quantity was estimated to include 4,230 drums and 800 cubic yards of sludge.

May 26, 1983 – The DWR reported by telephone to Mr. Erskine that the results from the samples collected from his yard adjacent to the Markay Chemicals facility were negative. Mr. Erskine reported that he believed that dead grass on his property was due to seepage from

the adjacent Markay Chemicals.

March 25, 1988 – The DNR completed a RCRA Compliance Evaluation Inspection. A notice of non-compliance was subsequently issued to Markay Chemicals on April 11, 1988 due to open containers of hazardous waste.

March 27, 1989 – Lillian Shaheen reported to the DNR that "Kleen-Way Industries had merged with Markay Chemicals Company and no longer operated under the name of Kleen-Way Industries."

April 3, 1991 – The DNR performed a Compliance Evaluation Inspection. The following information was noted:

- Numerous 55-gallon drums, several containing material, were located to the left of the main building. Mr. Shaheen reported that the full drums contained "soap stick" for use in oil/gas drilling.
- The gravel surface near the drums was stained and small puddles of dark liquid were present. A worker reported that he poured out about one gallon of the H3-1 Steam Compound from a drum. A sample of the product was determined to have a pH of approximately 12.1.
- Eight full 55-gallon drums of material were located adjacent to the fence on the right side of the facility. Mr. Shaheen stated that the drums contained dirty, waste solvent from the parts cleaning business and that the facility had discontinued the parts cleaning service and he needed to ship several drums of waste material off-site. The eight drums were rusted and not labeled.
- Several red 30-gallon and16-gallon drums were also observed on the right side of the facility adjacent to the fence. All drums were half to two-thirds full and some were in poor condition. Mr. Shaheen stated that the drums contained waste solvent. Two of the 16-gallon drums were labeled as containing hazardous waste. A sample was taken from a 30-gallon waste drum and determined to have a flashpoint of 118.7 degrees Fahrenheit. This material was classified as a D001 characteristic hazardous waste.
- Several large capacity product storage tanks were stacked on cinder blocks without secondary containment inside the main facility building. The tanks are used to store flammable liquids such as methanol, toluene, and isopropyl alcohol. Numerous 55-gallon drums of product and chemical ingredients were also observed. Drums were stacked four or five high on one side, many in poor condition.

In addition, the following violations were reported:

- The facility stored drums of hazardous waste on-site without a permit.
- The facility created an imminent and substantial endangerment to public health, safety and the environment.
- The facility failed to label containers holding hazardous waste with an accumulation start date.
- The facility failed to label containers holding hazardous waste with the words

"Hazardous Waste."

- The facility failed to make a hazardous waste determination of containers holding waste materials on site.
- The facility improperly prepared a hazardous waste manifest. The facility used the old company name, "Kleen-Way Industries" in the manifest document No. 00001.
- The facility failed to submit an exemption report to the Chief of Waste Management.

September 3, 1991 – The WVDNR prepared a Sampling Plan for the Site. The following information was noted:

- Markay Chemicals Company was a manufacturer of various industrial detergents, cleansers, and degreasers.
- The company, in the past, had provided parts cleaning services to area businesses. Markay Chemicals leased parts cleaning units to their customers, providing both pure solvents for the units and periodic cleaning of units to remove the spent solvent. Spent solvents were returned to Markay Chemicals for distillation on site.
- Concerns at the Site included the poor condition containers of unapproved waste containers and USTs holding undetermined wastes on site.
- The hazardous materials of concern were petroleum hydrocarbons and solvents (i.e. methanol, toluene, isopropyl alcohol, methylene chloride, 1,2-dichloroethane, benzene, chlorobenzene, ethylbenzene, and xylene), possible heavy metals, acids, bases, and herbicides.
- Liquid and/or sludge samples would be analyzed for Ignitability, Toxicity Characteristic Leaching Procedure (TCLP), benzene, 1,2-dichloroethane, Extraction Procedure Toxicity (EP Tox), percent solids, and lead.
- Ten grab samples would be obtained from a group of 17 hazardous waste 55-gallon drums using coliwasa or drum thiefs.
- Samples would be collected from the two USTs using bailers or coliwasas.
- Samples would also be collected from the two drums using coliwasas or drum thiefs.

September 9, 1992 – Consent Order HW-316-92 was issued to Markay Chemicals Corporation as a result of a Complaint Investigation and Sampling Inspection conducted on June 3, 1991 that noted the following:

- Markay Chemicals stored hazardous waste in two USTs on-site without a permit or interim status.
- Representatives of Markay Chemicals reported that a service station originally operated at the site and used the USTs for gasoline storage.
- Markay Chemicals had not registered the USTs with the UST section as product storage tanks. Markay Chemicals had not applied for a hazardous waste storage permit with the Hazardous Waste Permits Office.

The Order Required Markay Chemicals to comply with the following:

- Remove the contents of the unpermitted hazardous waste storage tanks from those

tanks and store the contents in containers which fully comply with all state and federal laws and regulations.
- Notify the Chief in writing at least five days prior to initiating removal of the tanks contents.
- After removing the contents of the tanks and without rinsing the tanks, temporarily seal the tanks to prevent any future use of the tanks.
- Within 30 days of removal of the tanks contents, submit a proposed plan detailing the manner in which Markay Chemicals intends to address the USTs and potential site contamination.
- Within 15 days of receipt of the Plan, the Chief would approve or modify the Plan.
- Markay Chemicals was instructed to implement the Plan on or before April 1, 1993.

April 12 – 14, 1993 – A Trip Report was prepared by the Office of Waste Management (OWM) to document the UST remediation project underway at the facility. The following information was noted:

- During excavation activities, the soil was observed to be black due to apparent petroleum contamination.
- Visible holes were observed on the underside of both tanks.
- Three roll-off boxes of contaminated soil were collected on-site and a total of seven 55-gallon drums and one 30-gallon drum of "Hazardous Waste" were collected from the USTs. The waste was observed to be a "greenish-gray gelatinous sludge that was very odoriferous and pumpable liquids were associated with it."
- Six samples were collected, and analyzed for TCLP – benzene, 1, 2-dichloroethane, lead, total methylene chloride and, BTEX.
- Toluene, ethylbenzene, and xylenes were detected.

May 3, 1993 – Correspondence from the WVDEP to Mr. Charles Shaheen. The following information was noted:

- The letter documented important points of a meeting on April 30, 1993, which was to clarify the management of three dumpsters of contaminated soil generated during the removal of two USTs.
- Soil in dumpster number 2 showed levels of 1, 2-dichloroethane and methylene chloride which warrants handling the soil as hazardous waste.
- Soil in dumpster 3 had levels of 1,2-dichloroethane (1.20 mg/kg) which is a possible hazardous waste. The levels were determined by testing the soil using EPA test methods for Toxicity Characteristic Leaching Procedure (TCLP).
- Analytical results from Dumpster Number 1 indicated that state regulations pertaining to LUSTs applied to this waste.
- Clean soil was allowed to be used as a temporarily fill in the excavation pit; however, further site remediation was a possibility based on the TCLP test results.
- Installation of groundwater monitoring wells was required at the end of soil remediation activities.

March 19, 2003 – The DEP issued a Notice of Violation. The following information was noted:

- The facility failed to make a hazardous waste determination of waste materials stored in containers and tanks.
- The facility was advised to characterize waste materials and arrange for disposal with a licensed waste handling firm.

March 13, 2003 – The WVDEP completed a Compliance Evaluation Inspection. The following information was noted:

- At that time the current company name was Tornado Products, Inc, "Formulator of Industrial Cleaning Products."
- Lee Roberts was the owner of Tornado Products, Inc. He purchased the rights to produce and sell several industrial cleaning products that were offered by Markay Chemicals. Charles Shaheen still owned the building and property at that time.
- Products that were still manufactured and sold include Tornado, Supershine, Aluminum Brite, Paraffin Solvent, and Five-in-One.
- A physical inspection identified twelve 55-gallon drums in the western corner of the production area stacked three pallets high and a vertical storage tank marked "Sodium Cumene" held an unknown liquid. When questioned, Lee Roberts claimed that Charles Shaheen owned this item. Charles Shaheen acknowledged that several materials needed to be disposed and stated that he was working with Onyx and Ecofirst for assistance.

November 2006 - Marshall Miller & Associates, Inc. prepared an Executive Summary Report on behalf of the WVDEP, OER. The following information was noted:

- The Site was owned by RoJo Properties.
- Empty 55-gallon drums were located outside around the building.
- Waste "pond" area was paved over.
- No evidence of spillage, dumping, or distressed vegetation was observed.
- Prior to the chemical plant, the Site was used as a retail gasoline station with USTs.
- Impact from site activities were the result of raw material spillage, improper storage of recovered waste, and improper disposal of the waste products.
- Mr. Shaheen claimed that the only waste generated during the process was spillage of raw materials. The chemicals were rinsed to a floor drain and stored in a waste containment "pond" on the property.

3.0 ENVIRONMENTAL SETTING

3.1 Soils

Soil at the Site is classified as an Urban Land-Fluvaquents complex (Of) soil type by the United States Department of Agriculture (USDA), Soil Conservation Service (SCS). This

soil type consists of nearly level, poorly drained, deep Fluvaquents on low terraces and flood plains. This complex consists of areas where more than 55% of the surface is urban land, 30% Fluvaquents, and 15% other soils. Permeability of the Fluvaquents is slow to moderate. Available water capacity is moderate to high. Runoff is slow.

3.2 Geology

The Site is underlain by the Quaternary-age alluvium consisting of unconsolidated gravel, sand, silt, and clay to depths of approximately 50 feet bgs. The site is underlain by the New River Formation of the Conemaugh Group from the Pennsylvanian period. The New River Formation consists of coal-bearing sandstones, siltstones, and shale. The formation contains Fire Creek, Beckley, and Sewell coal seams and Nuttall sandstone at the top. The Conemaugh Group consists of cyclic sequences of red and grey shale, siltstone, and sandstone, with limestones and coals. The Series extends from the base of the Pittsburgh coal to the top of the Upper Freeport coal.

3.3 Groundwater

Groundwater at the Site was encountered in relatively near-surface perched aquifers associated with discrete sand and gravel zones. During site assessment activities at the site the groundwater was encountered at depths between 25 and 35 feet bgs. The direction of groundwater flow would be expected to be to the north towards the Kanawha River. It would be expected that groundwater at the Site would be in direct hydraulic contact with the Kanawha River, which is located approximately 940 feet north of the Site. There are no known potable groundwater uses within the four-mile target distance limit (TDL) of the Site.

3.4 Surface Water

Surface water drainage from the Markay Chemicals Site would appear to flow to the north toward the Kanawha River, which is located approximately 940 feet to the north of the Site. The Kanawha River is used for recreational activities such as swimming, boating, and fishing. It should be noted that the Kanawha River is currently under a "Do not eat" fish advisory adjacent to and downgradient of the Markay Chemicals Site. However, it should be noted that people fish from the Kanawha River. The Coal River is also located approximately 850 feet east of the Site. The confluence of the Coal River and the Kanawha River is approximately 770 feet northeast of the Site. There are no known surface water intakes located on the Kanawha River within the 15 mile TDL downstream of the Site. A surface water intake is located on the Coal River approximately 0.7 miles upstream from the Site outside of the 15 mile TDL downstream of the Site. The Site is located within the 100-year floodplain of the Kanawha and Coal Rivers.

3.5 Demographics

Based on information obtained from the U.S. Census Bureau LandView® 5 version 1.0 Custom Census CD, the population for the area surrounding the Site is shown in the table on the following page:

ORIGINAL

REDACTED SECTION

3.6 Sensitive Environments

Based on information obtained from the U.S. Fish and Wildlife Service (USFWS), National Wetland Inventory (NWI) website, there are no wetlands present at the Site. However, there are Forested/Shrub, Riverine and Emergent wetland habitats associated with the adjacent Coal River. The wetlands are located upstream approximately 1,100 feet south of the Site. The wetlands do not receive surface water runoff from the Markay Chemicals Site. The NWI map is depicted below on **Figure 3, *Wetland Map***.

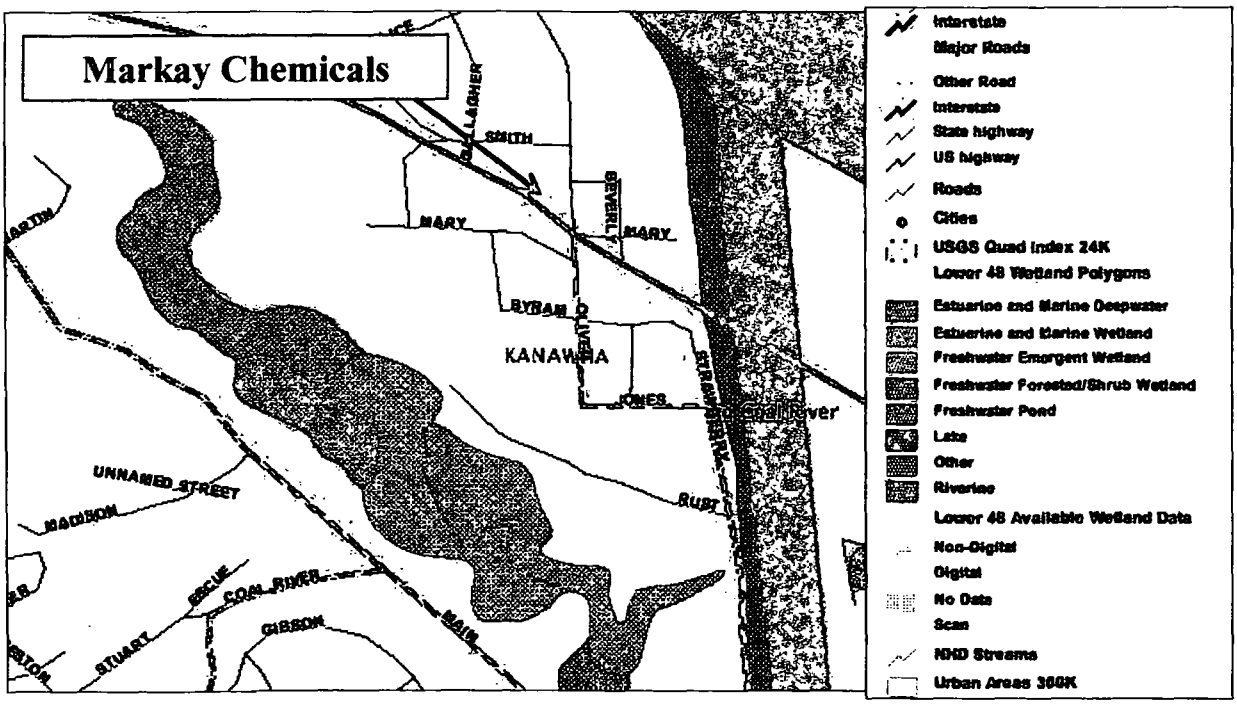


Figure 3, Wetland Map

3.7 Climate

Climate information for Kanawha County, West Virginia is available at the World Climate web-site (www.worldclimate.com). Average temperatures in the summer months range from

71.2 to 75.0 degrees Fahrenheit and range from 32.0 to 45.9 degrees Fahrenheit in the winter months. The average annual precipitation is 43 inches and the average monthly precipitation is 3.58 inches.

4.0 CURRENT SITE INVESTIGATIONS

TRIAD performed site investigation activities at the Markay Chemicals CERCLIS Site on June 12 and 13, 2007. During the sampling event, 12 surface soil, 6 subsurface soil, and 6 groundwater samples were collected. The locations of these samples are depicted on the attached **Figure 4, *Site Features and Sample Location Map***.

4.1 Surface Soil Sampling

TRIAD collected 12 surface soil samples from the following locations:

- Eight surface soil samples including one field duplicate were collected from various areas of the Site and identified as SS-1 through SS-6, SS-10, and SS-11 (SS-11 is a duplicate of SS-10).
- Four surface soil samples were collected from an adjacent residence and identified as SS-7 through SS-9 and SS-13.

4.2 Subsurface Soil Sampling

TRIAD collected six subsurface soil samples including one field duplicate from various areas of the Site and identified as SB-1 through SB-6 (SB-6 is a duplicate of SB-2).

4.3 Groundwater Sampling

TRIAD collected six groundwater samples including one field duplicate from various areas of the Site and identified as GW-1 through GW-6 (GW-6 is a field duplicate of GW-5).

4.4 Quality Control Samples

TRIAD procured quality control (QC) samples during the investigation to assess sampling precision, effectiveness of decontamination procedures, sample temperature preservation, any evidence of sample cross-contamination, and matrix effect of each media. The following QC samples were obtained:

- Field duplicates
- Equipment or rinse blanks
- Temperature blanks
- Inorganic matrix spike and matrix duplicate (MS/DUP)
- Organic matrix spike/matrix spike duplicate (MS/MSD)

The QC samples met the data quality objectives (DQOs) of the site specific *Sampling and Analysis Plan*.

4.5 Analytical Procedures and Data Validation Process

Data obtained during SIR activities may be used for a range of purposes by USEPA and the

WVDEP. Therefore, based on consultation with the USEPA Region III Site Assessment Officer, data collected were analyzed according to the specifications of the current USEPA CLP Statement of Work (SOW) for organic and inorganic analytes. TRIAD utilized the USEPA Field Operations and Records Management System II Lite (FORMS II Lite) computer program to prepare, track, and manage field sampling documentation.

The following is a summary of the analytical procedures and data validation processes:

- Case 36456, Sample Delivery Groups SDG C0001 and C0007 consisted of seven (7) aqueous samples analyzed for trace volatile and semivolatile compounds and eighteen (18) soil samples analyzed for volatile and semivolatile compounds. Three aqueous trip blanks and one aqueous sample analyzed for volatile compounds only. All samples were analyzed for volatiles and semivolatiles by KAP Technologies, Inc (KAP). The sample set included two rinsate blanks and three duplicate pairs. Samples were analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) SOM01.1 through the Routine Analytical Services program (RAS). Data were validated according to Region III Modification to the National Functional Guidelines for Organic Data Review, Level M2. The *Organic Data Validation Report* is included in the attached **Appendix 1, *Organic Data Validation Report.***

- Case 36456, SDG MC0007 consisted of eighteen (18) soil samples analyzed for total metals and cyanide by Sentinel, Inc. (SENTIN). The sample set contained two field duplicate pairs. Samples were analyzed in accordance with CLP SOW ILM05.4 through the RAS program. Data were validated according to Region III Modification to the National Functional Guidelines for Inorganic Data Review, Level IM1. The *Inorganic Data Validation Report* is included in the attached **Appendix 2, *Inorganic Data Validation Report.***

- Case 35456 SDG MC0027 consisted of three (3) aqueous samples analyzed for total metals and cyanide by Sentinel, Inc. (SENTIN). The sample set contained two rinsate blanks. Samples were analyzed in accordance with CLP SOW ILM05.4 through the RAS program. Data were validated according to Region III Modification to the National Functional Guidelines for Inorganic Data Review, Level IM1. The *Inorganic Data Validation Report* is included in the attached **Appendix 2, *Inorganic Data Validation Report.***

4.6 Analytical Discussion

Based on the COPCs evaluated at the Site, TRIAD has reviewed the laboratory analytical data for the most recent SIR investigations to identify and select COCs for the Site. A COPC is defined as any individual compound or analyte that was analyzed under the most recent site assessment activities. COCs were selected based on criteria in the USEPA *Risk Assessment Guidance for Superfund (RAGS), Volume 1, Human Health Evaluation Manual (Part A), Interim Final.* To be selected as a COC, a compound or analyte had to be detected at least once at a concentration greater than the contract required detection limit (CRDL), and a

concentration greater than the applicable *de minimis* value to which it is compared. In addition, inorganics had to be detected at a concentration greater than their published maximum background concentration for soil in West Virginia, as published in the *West Virginia VRRDA Guidance Manual (version 2.1)*.
The SIR laboratory analytical data were compared by media to the following USEPA and WVDEP environmental criteria and standards to select COCs:

Soil:

- USEPA Region III, *Industrial Soil Risk Based Concentrations*, April 2007.
- USEPA Region III, *Residential Soil Risk Based Concentrations*, April 2007.
- OSWER Directive: Revised Interim Soil Lead Guidance for CERCLA Sites, July 1994.
- West Virginia *Voluntary Remediation and Redevelopment Act (VRRDA) Guidance Manual* (Version 2.1) Table 2-3 *Natural Background Levels of Inorganics in Soil in West Virginia and Surrounding Areas.*

Ground Water:

- USEPA Region III Tap Water Risk Based Concentrations, April 2007.
- USEPA Primary Drinking Water Standards, Winter 2004.

Based on our evaluation, the occurrence and distribution of COPCs, selection of COCs, and the specific *de minimis* risk based value or criteria used for comparison purposes are summarized relative to environmental media in the attached Tables 1 through 4. The frequency of detection and comparison of these data to the applicable environmental *de minimis* RBC standards and criteria are presented in the following subsections. In addition, the CLP sample identifications are depicted on the attached **Figure 5, *CLP Sample Location Map*** and site and sample photographs are included in **Appendix 3, *Site Photographs*.**

4.6.1 On-Site Surface Soil Sample Results

The CLP Target Analyte List (TAL) inorganics (total metals), Target Compound List (TCL) volatile organic compounds (VOCs), and TCL semi-volatile organic compounds (SVOCs) were analyzed in eight on-Site surface soil samples and four surface soil samples collected from an adjacent residential property.

Arsenic was detected at concentrations greater than its respective benchmark value for industrial surface soil. All other inorganics, VOCs, and SVOCs were either not detected at concentrations greater than the Contract Required Detection Limit (CRDL) or were detected at concentrations less than their respective benchmark values. The occurrence, distribution and selection of COPCs, selection of COCs, and the specific *de minimis* risk based value or criteria used for comparison are summarized in **Table 1A-1C, *Occurrence, Distribution, and Selection of COC's – Surface Soil.***

4.6.2 Adjacent Resident Surface Soil Sample Results

The CLP TAL inorganics (total metals), TCL VOCs, and TCL SVOCs were analyzed in eight on-Site surface soil samples and four surface soil samples collected from an adjacent residential property.

Arsenic, chromium, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene were detected at concentrations greater than their respective benchmark values for residential surface soil. All other inorganics, VOCs, and SVOCs were either not detected at concentrations greater than the Contract Required Detection Limit (CRDL) or were detected at concentrations less than their respective benchmark values. The occurrence, distribution and selection of COPCs, selection of COCs, and the specific *de minimis* risk based value or criteria used for comparison are summarized in **Table 2A-2C, *Occurrence, Distribution, and Selection of COC's – Residential Surface Soil.***

4.6.3 Subsurface Soil Sample Results

The CLP TAL Inorganics (total metals), TCL VOCs, and TCL SVOCs were analyzed in six subsurface soil samples collected from various areas throughout the Site.

All inorganics, VOCs and SVOCs were either not detected at concentrations greater than the CRDL, or were detected at concentrations less than their respective benchmark values. The occurrence, distribution, and selection of COPCs, selection of COCs, and the specific *de minimis* risk based value or criteria used for comparison are summarized in **Tables 3A-3C, *Occurrence, Distribution, and Selection of COC's – Subsurface Soil.***

4.6.4 Groundwater Sample Results

The CLP TAL Inorganics (total metals) were analyzed in one groundwater sample, TCL VOCs were analyzed in six groundwater samples, and TCL SVOCs were analyzed in five groundwater samples all collected from various locations throughout the Site.

Total arsenic, total iron, total manganese, benzene, and 1,2-dichloroethane were detected at concentrations greater than their respective benchmark values. All other inorganics, VOCs and, SVOCs were either not detected at concentrations greater than the CRDL, or were detected at concentrations less than their respective benchmark values. The occurrence and distribution of COPCs, selection of COCs, and the specific *de minimis* risk based value or criteria used for comparison are summarized in **Tables 4A-4C, *Occurrence, Distribution, and Selection of COCs – Groundwater.***

4.7 COC Selection

TRIAD selected COCs based on the occurrence, distribution, and frequency of detection for COPCs using the rationale summarized in USEPA *Risk Assessment Guidelines for Superfund (RAGS)* and Section 2.6 of the WV Voluntary Remediation and Redevelopment Act (VRRDA) Guidance Manual. To be selected as a COC, a compound or analyte had to be detected at least once at a concentration greater than the CRDL, and a concentration greater

Figure 2,

2006 Aerial Photograph

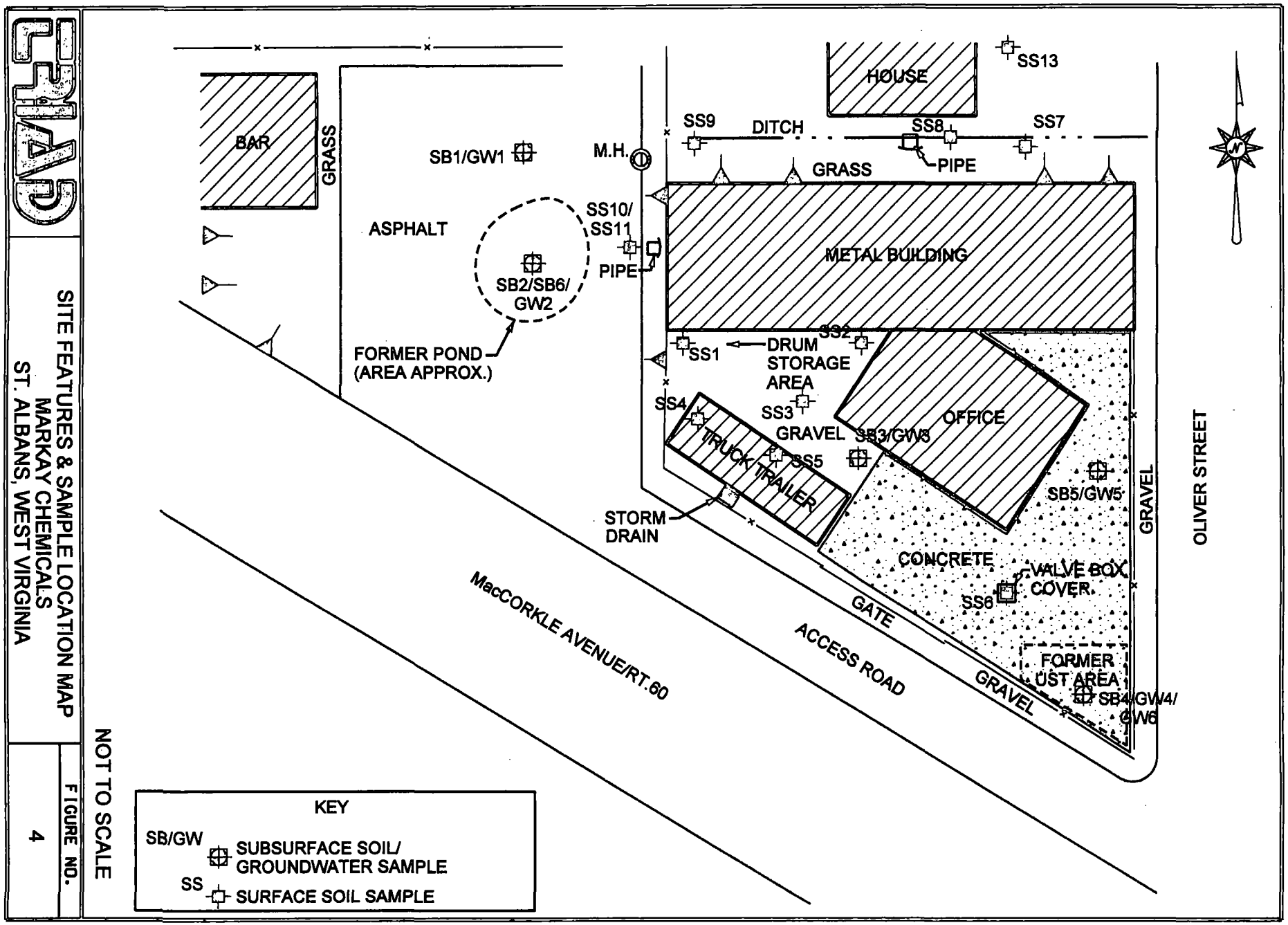
Figure 2, 2006 Aerial Photograph

Figure 4,

Site Features and Sample Location Map

CAD FILE 01-06-0599-1.DGN

JOB No. 01-06-0599



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SITE FEATURES & SAMPLE LOCATION MAP
MARKAY CHEMICALS
ST. ALBANS, WEST VIRGINIA

FIGURE NO. 4

NOT TO SCALE

ORIGINAL

Figure 5,

CLP Sample Location Map

CAD FILE 01-06-0599-2.DGN

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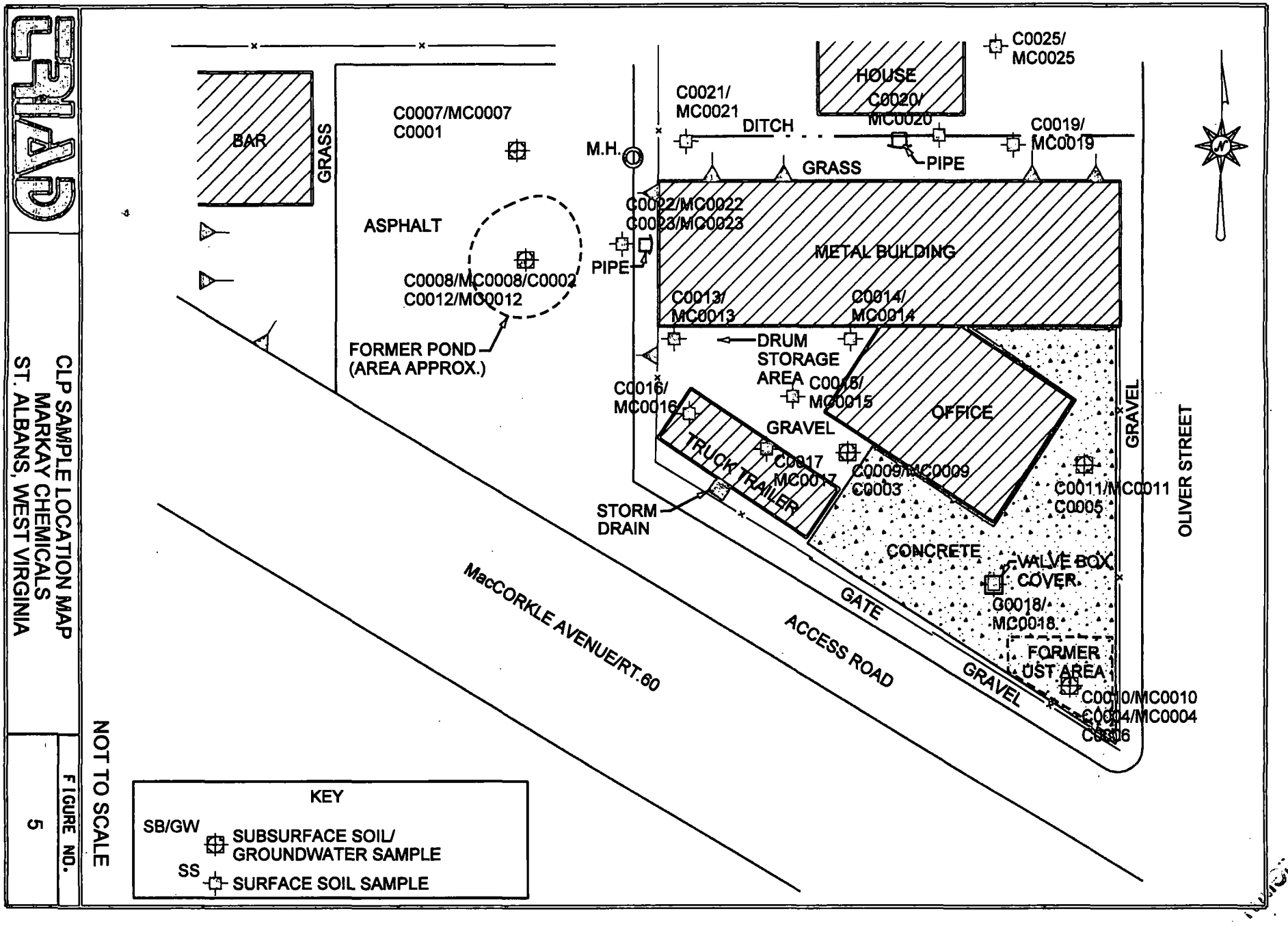

CLP SAMPLE LOCATION MAP
MARKAY CHEMICALS
ST. ALBANS, WEST VIRGINIA

FIGURE NO. 5

NOT TO SCALE

Table 1,

Occurrence, Distribution, and Selection of COCs, Surface Soil

Table 1A. Occurrence, Distribution and Selection of COC's
Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (mg/Kg) SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-10	SS-11 (FD of SS-10)	Frequency Detects	Samples	Concentration Min (mg/Kg)	Max (mg/Kg)	Action Level Concentration (mg/Kg)	COC ?	Background Concentration (mg/Kg)	HRS Observed Release?
Inorganics																	
Aluminum	20	7,960	8,180	3,170	9,470	8,990	7,800	10,800	9,860	8	8	3,170	10,800	1,000,000 [1]	NO	NA	YES
Antimony	6.0	2.2	2.2	1.4	1.0	1.2	2.6	1.1	ND	7	8	ND	2.6	410 [1]	NO	NA	NO
Arsenic	1.0	13.4	19.5	4.0 B	7.7	5.4 B	10.6	7.6	10.5	8	8	7.6	19.5	13 [3]	YES	NA	YES
Barium	20	133	153	115	172	241	343	153	122	8	8	115	343	200,000 [1]	NO	NA	YES
Beryllium	0.5	0.85	0.88	0.35	1.3	1.0	1.0	1.3	1.2	8	8	0.35	1.3	2,000 [1]	NO	NA	YES
Cadmium	0.5	2.6	3.5	5.1	1.4	1.7	13.5	0.74	0.64	8	8	0.64	13.5	510 [1]	NO	NA	YES
Calcium	500	59,600	10,800	248,000	41,400	44,500	32,300	30,100	30,400	8	8	10,800	248,000	NV	NO	NA	YES
Chromium	1.0	342	89.4	295	265	446	1,970	29.8	27.8	8	8	27.8	1970	3,100 [1]	NO	NA	YES
Cobalt	5.0	11.2	14.5	3.3	8.8	6.2	8.9	11.2	11.9	8	8	3.3	14.5	NV	NO	NA	YES
Copper	2.5	58.3	39.3	22.7	47.3	54.7	1,720	37.6	32.9	8	8	22.7	1,720	41,000 [1]	NO	NA	YES
Iron	10	46,400	36,800	18,700	25,600	25,700	52,800	19,700	19,700	8	8	18,700	52,800	720,000 [1]	NO	NA	YES
Lead	1.0	397	489	84.8	440	374	957	26.9	28.0	8	8	26.9	957	1,000 [2]	NO	NA	YES
Magnesium	500	37,000	4,610	16,300	10,400	9,570	6,090	6,150	4,320	8	8	4,320	37,000	NV	NO	NA	YES
Manganese	1.5	673	643	243	758	756	833	466	602	8	8	243	833	20,000 [1]	NO	NA	YES
Mercury	0.1	0.27	0.16	0.15	0.15	0.16	0.34	ND	0.050	7	8	ND	0.34	0.44 [4]	NO	NA	YES
Nickel	4.0	25.9	29.9	8.7	19.4	19.8	24.5	27.2	27.8	8	8	8.7	29.9	20,000 [1]	NO	NA	YES
Potassium	500	1,070	1,400	828	961	1,140	1,100	2,330	2,310	8	8	828	2,330	NV	NO	NA	YES
Selenium	3.5	ND	1.2	ND	ND	ND	2.8	ND	ND	2	8	ND	2.8	5,100 [1]	NO	NA	NO
Silver	1.0	4.2	2.6	9.5	1.5	18.1	4.4	0.75	0.79	8	8	0.75	18.1	5,100 [1]	NO	NA	YES
Sodium	500	2,360 B	1,660 B	664 B	1,790 B	1,240 B	6,380 B	565 B	491 B	8	8	565	6,380	NV	NO	NA	YES
Thallium	2.5	2.3	3.0	ND	1.6	ND	3.9	1.2	1.3	6	8	ND	3.9	72 [1]	NO	NA	YES
Vanadium	5.0	20.3	21.6	8.2	14.4	10.2	16.7	19.3	18.5	8	8	8.2	21.6	1,000 [1]	NO	NA	YES
Zinc	6.0	912	666	189	704	389	2,780	130	113	8	8	113	2,780	310,000 [1]	NO	NA	YES
Cyanide	2.5	ND	0.27	0.26	0.55	0.44	1.0	0.42	0.53	7	8	ND	1.0	20,000 [1]	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
NV No Value Available for Compound.
CRDL Contract Required Detection Limit.
1 USEPA Region III Industrial Soil Risk Based Concentration, April 2007.
2 Memorandum: OSWER Directive: Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. United States Environmental Protection Agency, July 1994. Office of Solid Waste and Emergency Response. Directive 9355.4-12.
3 Published natural background concentration for arsenic in soil in West Virginia ranges from 5.9 to 13.0 mg/Kg.
4 Published natural background concentration for mercury in soil in West Virginia ranges from 0.02 to 0.44 mg/Kg.
BG Background sample is not available.
B Not detected substantially above the level reported in laboratory or field blanks.

ORIGINAL

Table 1B. *Occurrence, Distribution and Selection of COC's*
Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COC	CRDL	Concentration (ug/Kg)								Frequency		Concentration		Action Level Concentration (ug/Kg)		Background Concentration (ug/Kg)	IRIS Observed Release?
		SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-10	SS-11 (FD of SS-10)	Detects	Samples	Min (ug/Kg)	Max (ug/Kg)		COC ?		
Volatile Organic Compounds																	
Dichlorodifluoromethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Chloromethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Vinyl chloride	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Bromomethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Chloroethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Trichlorofluoromethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,1-Dichloroethene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Acetone	10	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Carbon disulfide	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Methyl acetate	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Methylene chloride	5.0	ND	ND	4.6 B	ND	ND	ND	11 B	12 B	3	8	ND	12	380,000 [1]	NO	NA	YES
trans-1,2-Dichloroethene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Methyl tert-butyl ether	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,1-Dichloroethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
cis-1,2-Dichloroethene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
2-Butanone	10	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Bromochloromethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Chloroform	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,1,1-Trichloroethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Cyclohexane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Carbon tetrachloride	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Benzene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,2-Dichloroethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,4-Dioxane	100	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Trichloroethene	5.0	ND	ND	ND	ND	ND	20	ND	ND	1	8	ND	20	7,200 [1]	NO	NA	YES
Methylcyclohexane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,2-Dichloropropane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Bromodichloromethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
cis-1,3-Dichloropropene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
4-Methyl-2-pentanone	10	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Toluene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
trans-1,3-Dichloropropene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,1,2-Trichloroethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Tetrachloroethene	5.0	ND	ND	ND	ND	ND	65	ND	ND	1	8	ND	65	5,300 [1]	NO	NA	YES
2-Hexanone	10	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Dibromochloromethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,2-Dibromoethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Chlorobenzene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Ethylbenzene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO

ORIGINAL

Table 1B. Occurrence, Distribution and Selection of COC's
Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COIC	CRDL	Concentration (mg/Kg) SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-10	SS-10 (FD of SS-10)	Frequency Detects	Samples	Concentration Min (mg/Kg)	Max (mg/Kg)	Action Level Concentration (mg/Kg)	COC ?	Background Concentration (mg/Kg)	HRS Observed Release?
Volatile Organic Compounds																	
o-Xylene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
m,p-Xylene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Styrene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Bromoform	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Isopropylbenzene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,1,2,2-Tetrachloroethane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,3-Dichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,4-Dichlorobenzene	5.0	ND	ND	6.9	ND	ND	ND	ND	ND	1	8	ND	6.9	120,000 [1]	NO	NA	YES
1,2-Dichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,2-Dibromo-3-chloropropane	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,2,4-Trichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,2,3-Trichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
CRDL Contract Required Detection Limit.
1 USEPA Region III Industrial Soil Risk Based Concentration, April 2007.
BG Background sample is not available.
B Not detected substantially above the level reported in laboratory or field blanks.

Table 1C. Occurrence, Distribution and Selection of COC's
Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/Kg) SS-01	SS-02	SS-03	SS-04	SS-05	SS-06	SS-00	SS-01 (FD of SS-00)	Frequency Detects	Frequency Samples	Concentration Min (ug/Kg)	Concentration Max (ug/Kg)	Action Level Concentration (ug/Kg)		COC ?	Background Concentration (ug/Kg)	HRS Observed Release?
Base Neutral Acid Compounds																		
Benzaldehyde	170	ND	ND	ND	ND	ND	120	ND	ND	1	8	ND	120	100,000,000	1	NO	NA	NO
Phenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Bis(2-chloroethyl)ether	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2-Chlorophenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2-Methylphenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2,2'-Oxybis(1-chloropropane)	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Acetophenone	170	ND	ND	ND	ND	ND	680	ND	ND	1	8	ND	680	100,000,000	1	NO	NA	YES
4-Methylphenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
N-Nitroso-di-n-propylamine	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Hexachloroethane	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Nitrobenzene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Isophorone	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2-Nitrophenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2,4-Dimethylphenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Bis(2-chloroethoxy)methane	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2,4-Dichlorophenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Naphthalene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
4-Chloroaniline	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Hexachlorobutadiene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Caprolactam	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
4-Chloro-3-methylphenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2-Methylnaphthalene	170	65	ND	ND	ND	ND	ND	ND	ND	1	8	ND	65	4,100,000	1	NO	NA	NO
Hexachlorocyclopentadiene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2,4,6-Trichlorophenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2,4,5-Trichlorophenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
1,1'-Biphenyl	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2-Chloronaphthalene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2-Nitroaniline	330	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Dimethylphthalate	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2,6-Dinitrotoluene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Acenaphthylene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
3-Nitroaniline	330	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Acenaphthene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2,4-Dinitrophenol	330	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
4-Nitrophenol	330	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Dibenzofuran	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
2,4-Dinitrotoluene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Diethylphthalate	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
Fluorene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
4-Chlorophenyl-phenylether	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO
4-Nitroaniline	330	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA		NO	NA	NO

ORIGINAL

Table 1C. Occurrence, Distribution and Selection of COC's
Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/kg)								Frequency		Concentration		Action Level		Background	HRS
		SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-10	SS-10 (FD of SS-10)	Detects	Samples	Min (ug/kg)	Max (ug/kg)	Concentration (ug/kg)	COC ?	Concentration (ug/kg)	Observed Release?
Base Neutral Acid Compounds																	
4,6-Dinitro-2-methylphenol	330	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
N-Nitrosodiphenylamine	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
1,2,4,5-Tetrachlorobenzene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
4-Bromophenyl-phenylether	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Hexachlorobenzene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Atrazine	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Pentachlorophenol	330	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Phenanthrene	170	88	ND	ND	240	ND	ND	ND	ND	2	8	ND	240	310,000 [1]	NO	NA	YES
Anthracene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Carbazole	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Di-n-butylphthalate	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Fluoranthene	170	150	99	ND	510	ND	ND	ND	ND	3	8	ND	510	41,000,000 [1]	NO	NA	YES
Pyrene	170	130	100	ND	400	ND	ND	ND	ND	3	8	ND	400	31,000,000 [1]	NO	NA	YES
Butylbenzylphthalate	170	ND	ND	ND	ND	250	ND	ND	ND	1	8	ND	250	200,000,000 [1]	NO	NA	YES
3,3'-Dichlorobenzidine	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Benzo(a)anthracene	170	74	ND	ND	270	ND	ND	ND	ND	2	8	ND	270	3,900 [1]	NO	NA	YES
Chrysene	170	110	ND	ND	300	ND	ND	ND	ND	2	8	ND	300	390,000 [1]	NO	NA	YES
Bis(2-ethylhexyl)phthalate	170	230	1,100	ND	180	690	480	ND	ND	5	8	ND	1100	200,000 [1]	NO	NA	YES
Di-n-octylphthalate	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Benzo(b)fluoranthene	170	160	ND	ND	300	ND	ND	ND	ND	2	8	ND	300	3,900 [1]	NO	NA	YES
Benzo(k)fluoranthene	170	ND	ND	ND	170	ND	ND	ND	ND	1	8	ND	170	39,000 [1]	NO	NA	YES
Benzo(a)pyrene	170	89	ND	ND	230	ND	ND	ND	ND	2	8	ND	230	390 [1]	NO	NA	YES
Indeno(1,2,3-cd)pyrene	170	93	ND	ND	ND	ND	ND	ND	ND	1	8	ND	93	3,900 [1]	NO	NA	NO
Dibenzo(a,h)anthracene	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO
Benzo(g,h,i)perylene	170	95	ND	ND	ND	ND	ND	ND	ND	1	8	ND	95	31,000,000 [1]	NO	NA	NO
2,3,4,6-Tetrachlorophenol	170	ND	ND	ND	ND	ND	ND	ND	ND	0	8	ND	ND	NA	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
CRDL Contract Required Detection Limit.
Phenanthrene criteria based on surrogate PAH Anthracene.
Benzo(g,h,i)perylene criteria based on surrogate PAH Pyrene.
1 USEPA Region III Industrial Soil Risk Based Concentration, April 2007.
BG Background sample is not available.

ORIGINAL

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Table 2,

Occurrence, Distribution, and Selection of COCs, Residential Surface Soil

Table 2A. Occurrence, Distribution and Selection of COC's
Residential Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration mg/Kg				Frequency		Concentration		Action Level	COC ?	Background	IRS
		SS-7	SS-8	SS-9	SS-13	Detects	Samples	Min (mg/Kg)	Max (mg/Kg)	Concentration (mg/Kg)		Concentration (mg/Kg)	Observed Release?
Inorganics													
Aluminum	20	6,670	9,190	4,580	5,910	4	4	4580	9,190	78,000	NO	NA	YES
Antimony	6	ND	2.8	2.2	1.2	3	4	ND	2.8	31 [1]	NO	NA	NO
Arsenic	1	23.6	10.5	8.2 B	7.7 B	4	4	7.7	23.6	0.43 [3]	YES	NA	YES
Barium	20	82.1	141	239	142	4	4	82.1	239	16,000 [1]	NO	NA	YES
Beryllium	0.5	1.2	0.93	0.38	0.74	4	4	0.38	1.20	160 [1]	NO	NA	YES
Cadmium	0.5	0.31	1.5	0.87	1.4	4	4	0.31	0.87	39 [1]	NO	NA	YES
Calcium	500	26,100	22,900	8,010	65,200	4	4	8010	65,200	NV	NO	NA	YES
Chromium	1	59.7	39.7	242	24.3	4	4	24.3	242	230 [1]	YES	NA	YES
Cobalt	5	7.2	11.6	3.8	6.8	4	4	3.8	11.6	NV	NO	NA	YES
Copper	2.5	15.9	109	135	51.8	4	4	15.9	135	3,100 [1]	NO	NA	YES
Iron	10	11,800	51,800	20,900	16,800	4	4	11,800	51,800	55,000 [1]	NO	NA	YES
Lead	1	30.4	97.6	94.9	394	4	4	30.4	394	400 [2]	NO	NA	YES
Magnesium	500	3,160	6,590	1,120	11,700	4	4	1,120	11,700	NV	NO	NA	YES
Manganese	1.5	282	425	162	512	4	4	162	512	1,600 [1]	NO	NA	YES
Mercury	0.1	0.11	0.18	0.32	0.071	4	4	0.071	0.32	0.44 [4]	NO	NA	YES
Nickel	4	14.8	31.0	9.7	15.4	4	4	9.7	31	1,600 [1]	NO	NA	YES
Potassium	500	1,530	1,560	2,460	872	4	4	872	2,460	NV	NO	NA	YES
Selenium	3.5	ND	1.8	2.5	ND	2	4	ND	2.5	390 [1]	NO	NA	NO
Silver	1	ND	2.9	1.5	0.90	3	4	ND	2.9	390 [1]	NO	NA	YES
Sodium	500	527 B	1,340 B	804 B	1740 B	4	4	174	1,340	NV	NO	NA	YES
Thallium	2.5	ND	4.4	ND	ND	1	4	ND	4.4	5.5 [1]	NO	NA	YES
Vanadium	5	13.1	18.1	17.3	13.7	4	4	13.1	18.1	78 [1]	NO	NA	YES
Zinc	6	69.3	366	152	276	4	4	69.3	366	23,000 [1]	NO	NA	YES
Cyanide	2.5	0.53	0.32	0.43	0.27	4	4	0.27	0.53	1,600 [1]	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
NV No Value available for compound.
CRDL Contract Required Detection Limit.
1 USEPA Region III Residential Soil Risk Based Concentration, April 2007.
2 Memorandum: OSWER Directive: Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. *United States Environmental Protection Agency, July 1994. Office of Solid Waste and Emergency Response. Directive 9355.4-12.*
3 Published natural background concentration for arsenic in soil in West Virginia ranges from 5.9 to 13.0 mg/Kg.
4 Published natural background concentration for mercury in soil in West Virginia ranges from 0.02 to 0.44 mg/Kg.
BG Background sample is not available.
B Not detected substantially above the level reported in laboratory or field blanks.

ORIGINAL

Table 2B. Occurrence, Distribution and Selection of COC's
Residential Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/Kg) SS-7	SS-8	SS-9	SS-13	Frequency Detects	Samples	Concentration Min (ug/Kg)	Max (ug/Kg)	Action Level Concentration (ug/Kg)	COC ?	Background Concentration (ug/Kg)	IRIS Observed Release?
Volatile Organic Compounds													
Dichlorodifluoromethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Chloromethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Vinyl chloride	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Bromomethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Chloroethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Trichlorofluoromethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,1-Dichloroethene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Acetone	10	29 B	54 B	43 B	ND	3	4	ND	54	70,000,000 [1]	NO	NA	YES
Carbon disulfide	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Methyl acetate	5.0	6.2	ND	ND	ND	1	4	ND	6.2	78,000,000 [1]	NO	NA	YES
Methylene chloride	5.0	ND	ND	16 B	4.2 B	2	4	ND	16	85,000 [1]	NO	NA	YES
trans-1,2-Dichloroethene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Methyl tert-butyl ether	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,1-Dichloroethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
cis-1,2-Dichloroethene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2-Butanone	10	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Bromochloromethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Chloroform	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,1,1-Trichloroethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Cyclohexane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Carbon tetrachloride	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Benzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,2-Dichloroethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,4-Dioxane	100	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Trichloroethene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Methylcyclohexane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,2-Dichloropropane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Bromodichloromethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
cis-1,3-Dichloropropene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4-Methyl-2-pentanone	10	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO

Table 2B. Occurrence, Distribution and Selection of COC's
Residential Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/Kg) SS-7	SS-8	SS-9	SS-13	Frequency Detects	Samples	Concentration Min (ug/Kg)	Max (ug/Kg)	Action Level Concentration (ug/Kg)	COC ?	Background Concentration (ug/Kg)	HRS Observed Release?
Volatile Organic Compounds													
Toluene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
trans-1,3-Dichloropropene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,1,2-Trichloroethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Tetrachloroethene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2-Hexanone	10	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Dibromochloromethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,2-Dibromoethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Chlorobenzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Ethylbenzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
o-Xylene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
m,p-Xylene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Styrene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Bromoform	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Isopropylbenzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,1,2,2-Tetrachloroethane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,3-Dichlorobenzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,4-Dichlorobenzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,2-Dichlorobenzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,2-Dibromo-3-chloropropane	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,2,4-Trichlorobenzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,2,3-Trichlorobenzene	5.0	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
CRDL Contract Required Detection Limit.
1 USEPA Region III Residential Soil Risk Based Concentration, April 2007.
BG Background sample is not available.
B Not detected substantially above the level reported in laboratory or field blanks.

Table 2C. Occurrence, Distribution and Selection of COC's
Residential Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/Kg) SS-7	SS-8	SS-9	SS-15	Frequency Detects	Samples	Concentration Min (ug/Kg)	Max (ug/Kg)	Action Level Concentration (ug/Kg)	COC ?	Background Concentration (ug/Kg)	HRS Observed Release?
Base Neutral Acid Compounds													
Benzaldehyde	170	ND	ND	ND	84	1	4	ND	84	7,800,000 [1]	NO	NA	NO
Phenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Bis(2-chloroethyl)ether	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2-Chlorophenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2-Methylphenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2,2'-Oxybis(1-chloropropane)	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Acetophenone	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4-Methylphenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
N-Nitroso-di-n-propylamine	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Hexachloroethane	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Nitrobenzene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Isophorone	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2-Nitrophenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2,4-Dimethylphenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Bis(2-chloroethoxy)methane	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2,4-Dichlorophenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Naphthalene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4-Chloroaniline	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Hexachlorobutadiene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Caprolactam	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4-Chloro-3-methylphenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2-Methylnaphthalene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Hexachlorocyclopentadiene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2,4,6-Trichlorophenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2,4,5-Trichlorophenol	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO

Table 2C. Occurrence, Distribution and Selection of COC's
Residential Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/Kg) SS-7	SS-8	SS-9	SS-13	Frequency Detects	Samples	Concentration Min (ug/Kg)	Max (ug/Kg)	Action Level Concentration (ug/Kg)	COC ?	Background Concentration (ug/Kg)	HRS Observed Release?
Base Neutral Acid Compounds													
1,1'-Biphenyl	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2-Chloronaphthalene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2-Nitroaniline	330	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Dimethylphthalate	170	ND	ND	ND	780	1	4	ND	780	NV	NO	NA	YES
2,6-Dinitrotoluene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Acenaphthylene	170	ND	ND	ND	87	1	4	ND	87	4,700,000 [1]	NO	NA	YES
3-Nitroaniline	330	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Acenaphthene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2,4-Dinitrophenol	330	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4-Nitrophenol	330	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Dibenzofuran	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
2,4-Dinitrotoluene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Diethylphthalate	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Fluorene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4-Chlorophenyl-phenylether	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4-Nitroaniline	330	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4,6-Dinitro-2-methylphenol	330	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
N-Nitrosodiphenylamine	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
1,2,4,5-Tetrachlorobenzene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
4-Bromophenyl-phenylether	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Hexachlorobenzene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Atrazine	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Pentachlorophenol	330	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Phenanthrene	170	ND	ND	ND	350	1	4	ND	350	23,000,000 [1]	NO	NA	YES
Anthracene	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Carbazole	170	ND	ND	ND	ND	0	4	ND	ND	NA	NO	NA	NO
Di-n-butylphthalate	170	ND	ND	1,000	ND	1	4	ND	1,000	7,800,000 [1]	NO	NA	YES

Table 2C. Occurrence, Distribution and Selection of COC's
Residential Surface Soil (<2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/Kg) SS-7	SS-8	SS-9	SS-13	Frequency Detects	Samples	Concentration Min (ug/Kg)	Max (ug/Kg)	Action Level Concentration (ug/Kg)		COC ?	Background Concentration (ug/Kg)	IIRS Observed Release?
Base Neutral Acid Compounds														
Fluoranthene	170	ND	290	ND	1,100	2	4	ND	1,100	3,100,000	1	NO	NA	YES
Pyrene	170	ND	200	ND	710	2	4	ND	710	2,300,000	1	NO	NA	YES
Butylbenzylphthalate	170	ND	150	ND	450	2	4	ND	450	16,000,000	1	NO	NA	YES
3,3'-Dichlorobenzidine	170	ND	ND	ND	ND	0	4	ND	ND	NA		NO	NA	NO
Benzo(a)anthracene	170	ND	ND	ND	430	1	4	ND	430	220	1	YES	NA	YES
Chrysene	170	ND	170	ND	550	2	4	ND	550	22,000	1	NO	NA	YES
Bis(2-ethylhexyl)phthalate	170	ND	4,100	1,100	630	3	4	ND	4,100	46,000	1	NO	NA	YES
Di-n-octylphthalate	170	ND	ND	ND	84	1	4	ND	84	NV		NO	NA	NO
Benzo(b)fluoranthene	170	ND	ND	ND	690	1	4	ND	690	220	1	YES	NA	YES
Benzo(k)fluoranthene	170	ND	ND	ND	330	1	4	ND	330	2,200	1	NO	NA	YES
Benzo(a)pyrene	170	ND	ND	ND	460	1	4	ND	460	22	1	YES	NA	YES
Indeno(1,2,3-cd)pyrene	170	ND	ND	ND	380	1	4	ND	380	220	1	YES	NA	YES
Dibenzo(a,h)anthracene	170	ND	ND	ND	130	1	4	ND	130	22	1	YES	NA	YES
Benzo(g,h,i)perylene	170	ND	ND	ND	190	1	4	ND	190	2,300,000	1	NO	NA	YES
2,3,4,6-Tetrachlorophenol	170	ND	ND	ND	ND	0	4	ND	ND	NA		NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
NV No Value Available for Compound.
CRDL Contract Required Detection Limit.
Acenapthylene criteria based on surrogate PAH Acenaphthene.
Phenanthrene criteria based on surrogate PAH Anthracene.
Benzo(g,h,i)perylene based on surrogate PAH Pyrene.
1 USEPA Region III Residential Soil Risk Based Concentration, April 2007.
BG Background sample is not available.

Table 3,

Occurrence, Distribution, and Selection of COCs, Subsurface Soil

Table 3A. Occurrence, Distribution and Selection of COC's
Subsurface Soil (>2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (mg/Kg) SB-1	SB-2	SB-3	SB-4	SB-5	SB-6 (FD of SB-2)	Frequency Detects	Samples	Concentration Min (mg/Kg)	Max (mg/Kg)	Action Level Concentration (mg/Kg)	COC ?	Background Concentration (mg/Kg)	IRS Observed Release?
Inorganics															
Aluminum	20	7,550	7,000	6,410	8,690	8,140	7,780	6	6	6,410	8,690	1,000,000 [1]	NO	NA	YES
Antimony	6	ND	1.1	1.1	1.2	1.1	ND	4	6	ND	1.2	410 [1]	NO	NA	NO
Arsenic	1	5.1 B	4.0 B	5.6 B	6.1 B	5.8 B	5.7 B	6	6	4	6.1	13 [3]	NO	NA	YES
Barium	20	83.1	69.8	64.7	105	85.8	77.0	6	6	64.7	105	200,000 [1]	NO	NA	YES
Beryllium	0.5	1.0	0.88	1.0	1.1	0.98	1.0	6	6	0.88	1.1	2,000 [1]	NO	NA	YES
Cadmium	0.5	ND	ND	ND	0.22	ND	ND	1	6	ND	0.22	510 [1]	NO	NA	NO
Calcium	500	379	1,910	314	512	703	5,510	6	6	314	5510	NV	NO	NA	YES
Chromium	1	11.3	11.0	12.1	14.4	11.6	12.3	6	6	11	14.4	3,100 [1]	NO	NA	YES
Cobalt	5	9.6	10.3	10.9	10.3	13.1	9.4	6	6	9.4	13.1	NV	NO	NA	YES
Copper	2.5	18.7	18.7	18.4	19.2	18.2	21.2	6	6	18.2	21.2	41,000 [1]	NO	NA	YES
Iron	10	25,800	20,900	25,300	27,300	26,100	25,800	6	6	20,900	27,300	720,000 [1]	NO	NA	YES
Lead	1	11.3	10.5	12.0	10.8	13.1	11.7	6	6	10.5	13.1	1,000 [2]	NO	NA	YES
Magnesium	500	2,360	2,450	1,900	2,470	2,510	3,000	6	6	1900	3000	NV	NO	NA	YES
Manganese	1.5	176	215	443	505	647	192	6	6	176	647	20,000 [1]	NO	NA	YES
Mercury	0.1	0.069	0.070	ND	0.019	0.019	0.032	5	6	ND	0.07	0.44 [4]	NO	NA	NO
Nickel	4	15.9	15.0	14.0	16.7	17.2	14.5	6	6	14	17.2	20,000 [1]	NO	NA	YES
Potassium	500	831	840	787	996	860	845	6	6	787	996	NV [2]	NO	NA	YES
Selenium	3.5	1.1	ND	1.1	ND	ND	ND	2	6	ND	1.1	5,100 [1]	NO	NA	NO
Silver	1	1.3	1.0	1.2	1.4	1.3	1.2	6	6	1	1.4	5,100 [1]	NO	NA	YES
Sodium	500	437 B	408 B	425 B	473 B	482 B	454 B	6	6	408	482	NV	NO	NA	NO
Thallium	2.5	2.4	1.5	2.0	2.5	2.2	2.1	6	6	1.5	2.5	72 [1]	NO	NA	YES
Vanadium	5	16.9	15.3	16.1	18.2	17.1	17.2	6	6	15.3	18.2	1,000 [1]	NO	NA	YES
Zinc	6	63.4	58.9	53.1	67.6	68.3	60.8	6	6	53.1	68.3	310,000 [1]	NO	NA	YES
Cyanide	2.5	5.5	ND	ND	ND	1.9	ND	2	6	ND	5.5	20,000 [1]	NO	NA	YES

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
NV No Value Availbable for Compound.
CRDL Contract Required Detection Limit.
1 USEPA Region III Industrial Soil Risk Based Concentration, April 2007.
2 Memorandum: OSWER Directive: Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. United States Environmental Protection Agency, July 1994. Office of Solid Waste and Emergency Response. Directive 9355.4-12.
3 Published natural background concentration for arsenic in soil in West Virginia ranges from 5.9 to 13.0 mg/Kg.
4 Published natural background concentration for mercury in soil in West Virginia ranges from 0.02 to 0.44 mg/Kg.
BG Background sample is not available.
B Not detected substantially above the level reported in laboratory or fild blanks.

Table 3B. Occurrence, Distribution and Selection of COC's
Subsurface Soil (>2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/Kg) SB-1	SB-2	SB-3	SB-4	SB-5	SB-6 (FD of SB-2)	Frequency Detects	Samples	Concentration Min (ug/Kg)	Max (ug/Kg)	Action Level Concentration (ug/Kg)	COC?	Background Concentration (ug/Kg)	ITRS Observed Release?
Volatile Organic Compounds															
Dichlorodifluoromethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chloromethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Vinyl chloride	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bromomethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chloroethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Trichlorofluoromethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1-Dichloroethene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Acetone	10	ND	ND	ND	ND	ND	19 B	1	6	ND	ND	920,000,000 [1]	NO	NA	YES
Carbon disulfide	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Methyl acetate	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Methylene chloride	5.0	ND	3.7 B	ND	ND	ND	ND	1	6	ND	ND	380,000 [1]	NO	NA	YES
trans-1,2-Dichloroethene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Methyl tert-butyl ether	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1-Dichloroethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
cis-1,2-Dichloroethene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Butanone	10	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bromochloromethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chloroform	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1,1-Trichloroethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Cyclohexane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Carbon tetrachloride	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Benzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dichloroethane	5.0	ND	ND	ND	6.1	ND	ND	1	6	ND	6.1	31,000 [1]	NO	NA	YES
1,4-Dioxane	100	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Trichloroethene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Methylcyclohexane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dichloropropane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bromodichloromethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
cis-1,3-Dichloropropene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4-Methyl-2-pentanone	10	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Toluene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
trans-1,3-Dichloropropene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1,2-Trichloroethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Tetrachloroethene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Hexanone	10	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Dibromochloromethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dibromoethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chlorobenzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Ethylbenzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO

Table 3B. Occurrence, Distribution and Selection of COC's
Subsurface Soil (>2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COIC	CRDL	Concentration (ug/Kg) SB-1	SB-2	SB-3	SB-4	SB-5	SB-6 (FD of SB-2)	Frequency Detects	Samples	Concentration Min (ug/Kg)	Max (ug/Kg)	Action Level Concentration (ug/Kg)	COC ?	Background Concentration (ug/Kg)	HRS Observed Release?
Volatile Organic Compounds															
o-Xylene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
m,p-Xylene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Styrene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bromoform	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Isopropylbenzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1,2,2-Tetrachloroethane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,3-Dichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,4-Dichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dibromo-3-chloropropane	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2,4-Trichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2,3-Trichlorobenzene	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
CRDL Contract Required Detection Limit.
1 USEPA Region III Industrial Soil Risk Based Concentration, April 2007.
B Not detected substantially above the level reported in laboratory or field blanks.
BG Background sample is not available.

Table 3C. Occurrence, Distribution and Selection of COC's
Subsurface Soil (>2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/Kg)						Frequency		Concentration		Action Level Concentration (ug/Kg)	COC ?	Background Concentration (ug/Kg)	IRIS Observed Release?
		SB-1	SB-2	SB-3	SB-4	SB-5	SB-6 (FD of SB-2)	Detects	Samples	Min (ug/Kg)	Max (ug/Kg)				
Semi-Volatile Organic Compounds															
Benzaldehyde	170	ND	ND	ND	ND	ND	87	1	6	ND	87	100,000,000	NO	NA	NO
Phenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bis(2-chloroethyl)ether	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Chlorophenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Methylphenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,2'-Oxybis(1-chloropropane)	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Acetophenone	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4-Methylphenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
N-Nitroso-di-n-propylamine	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Hexachloroethane	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Nitrobenzene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Isophorone	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Nitrophenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,4-Dimethylphenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bis(2-chloroethoxy)methane	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,4-Dichlorophenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Naphthalene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4-Chloroaniline	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Hexachlorobutadiene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Caprolactam	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4-Chloro-3-methylphenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Methylnaphthalene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Hexachlorocyclopentadiene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,4,6-Trichlorophenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,4,5-Trichlorophenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1'-Biphenyl	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Chloronaphthalene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Nitroaniline	330	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Dimethylphthalate	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,6-Dinitrotoluene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Acenaphthylene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
3-Nitroaniline	330	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Acenaphthene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,4-Dinitrophenol	330	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4-Nitrophenol	330	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Dibenzofuran	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,4-Dinitrotoluene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Diethylphthalate	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Fluorene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4-Chlorophenyl-phenylether	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO

ORIGINAL

Table 3C. Occurrence, Distribution and Selection of COC's
Subsurface Soil (>2 feet bgs)
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COC	CRDL	Concentration (ug/Kg) SB-1	SB-2	SB-3	SB-4	SB-5	SB-6 (FD of SB-2)	Frequency Detects	Samples	Concentration Min (ug/Kg)	Max (ug/Kg)	Action Level Concentration (ug/Kg)	COC ?	Background Concentration (ug/Kg)	HRS Observed Release?
Semi-Volatile Organic Compounds															
4-Nitroaniline	330	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4,6-Dinitro-2-methylphenol	330	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
N-Nitrosodiphenylamine	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2,4,5-Tetrachlorobenzene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4-Bromophenyl-phenylether	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Hexachlorobenzene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Atrazine	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Pentachlorophenol	330	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Phenanthrene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Anthracene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Carbazole	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Di-n-butylphthalate	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Fluoranthene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Pyrene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Butylbenzylphthalate	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
3,3'-Dichlorobenzidine	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Benzo(a)anthracene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chrysene	170	88	ND	ND	ND	ND	ND	1	6	ND	88	390,000 [1]	NO	NA	NO
Bis(2-ethylhexyl)phthalate	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Di-n-octylphthalate	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Benzo(b)fluoranthene	170	110	ND	ND	ND	ND	ND	1	6	ND	110	3,900 [1]	NO	NA	NO
Benzo(k)fluoranthene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Benzo(a)pyrene	170	96	ND	ND	ND	ND	ND	1	6	ND	96	390 [1]	NO	NA	NO
Indeno(1,2,3-cd)pyrene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Dibenzo(a,h)anthracene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Benzo(g,h,i)perylene	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2,3,4,6-Tetrachlorophenol	170	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
CRDL Contract Required Detection Limit.
1 USEPA Region III Industrial Soil Risk Based Concentration, April 2007.
BG Background sample is not available.

ORIGINAL

Table 4,

Occurrence, Distribution, and Selection of COCs, Groundwater

Table 4A. Occurrence, Distribution and Selection of COC's
Groundwater
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/L) GW-4	Frequency Detects	Frequency Samples	Concentration Min (ug/L)	Concentration Max (ug/L)	Action Level Concentration (ug/L)	COC ?	Background Concentration (ug/L)	HRS Observed Release?
Inorganics (Total Metals)										
Aluminum	200	10,300	1	1	10,300	10,300	37,000 [1]	NO	NA	YES
Antimony	60	ND	0	1	ND	ND	NA	NO	NA	NO
Arsenic	10	17.9 B	1	1	17.9	17.9	0.045 [1]	YES	NA	YES
Barium	200	963	1	1	963	963	7,300 [1]	NO	NA	YES
Beryllium	5	2.8 B	1	1	2.8	2.8	73 [1]	NO	NA	NO
Cadmium	5	2.7	1	1	2.7	2.7	18 [1]	NO	NA	NO
Calcium	5000	33,700	1	1	33,700	33,700	NV	NO	NA	YES
Chromium	10	25.1	1	1	25.1	25.1	110 [1]	NO	NA	YES
Cobalt	50	38.2	1	1	38.2	38.2	NA	NO	NA	NO
Copper	25	20	1	1	20	20	1,500 [1]	NO	NA	NO
Iron	100	27,400	1	1	27,400	27,400	26,000 [1]	YES	NA	YES
Lead	10	14.3	1	1	14.3	14.3	15 [2]	NO	NA	YES
Magnesium	5000	37,300	1	1	37,300	37,300	NV	NO	NA	YES
Manganese	100	2,020	1	1	2,020	2,020	730 [1]	YES	NA	YES
Mercury	0.2	0.080	1	1	0.08	0.08	2 [2]	NO	NA	NO
Nickel	40	154	1	1	154	154	730 [1]	NO	NA	YES
Potassium	5000	7,040	1	1	7,040	7,040	NV	NO	NA	YES
Selenium	35	ND	0	1	ND	ND	NA	NO	NA	NO
Silver	10	ND	0	1	ND	ND	NA	NO	NA	NO
Sodium	5000	42,200 B	1	1	42,200	42,200	NV	NO	NA	YES
Thallium	25	ND	0	1	ND	ND	NA	NO	NA	NO
Vanadium	50	20.5	1	1	20.5	20.5	37 [1]	NO	NA	NO
Zinc	60	211	1	1	211	211	11,000 [1]	NO	NA	YES
Cyanide	10	ND	0	1	ND	ND	NA	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
NV No Value Available.
CRDL *Contract Required Detection Limit.*
1 USEPA Region III, Tap Water Risk Based Concentration, April 2007.
2 USEPA National Primary Drinking Water Standards, Winter 2004.
BG Background sample is not available.
B Not detected substantially above the level reported in laboratory or field blanks.

Table 4B. Occurrence, Distribution and Selection of COC's
Groundwater
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/L) GW-1	GW-2	GW-3	GW-4	GW-5	GW-6 (FD of GW-5)	Frequency Detects	Samples	Concentration Min (ug/L)	Max (ug/L)	Action Level Concentration (ug/L)	COC ?	Background Concentration (ug/L)	HRS Observed Release?
Volatile Organic Compounds															
Dichlorodifluoromethane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chloromethane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Vinyl chloride	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bromomethane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chloroethane	0.5	ND	ND	ND	ND	1.9	1.8	2	6	ND	1.9	3.6 [1]	NO	NA	YES
Trichlorofluoromethane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1-Dichloroethene	0.5	ND	ND	ND	ND	2.1	2.1	2	6	ND	2.1	350 [1]	NO	NA	YES
1,1,2-trichloro-1,2,2-trifluoroethane	0.5	ND	ND	ND	2.9	2.0	2.1	3	6	ND	2.9	59,000 [1]	NO	NA	YES
Acetone	5.0	ND	19 B	4.8 B	ND	ND	ND	2	6	ND	19.0	5,500 [1]	NO	NA	YES
Carbon disulfide	0.5	0.85	ND	ND	0.70	ND	ND	2	6	ND	0.85	1,000 [1]	NO	NA	YES
Methyl acetate	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Methylene chloride	0.5	1.4	0.96 B	1.2 B	ND	ND	ND	3	6	ND	1.4	4.1 [1]	NO	NA	YES
trans-1,2-Dichloroethene	0.5	ND	ND	ND	ND	1.1	0.85	2	6	ND	1.1	110 [1]	NO	NA	YES
Methyl tert-butyl ether	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1-Dichloroethane	0.5	ND	ND	ND	3.8	67	59	3	6	ND	67	900 [1]	NO	NA	YES
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND	15	14	2	6	ND	15	61 [1]	NO	NA	YES
2-Butanone	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bromochloromethane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chloroform	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND	5.8	4.9	2	6	ND	5.8	1,700 [1]	NO	NA	YES
Cyclohexane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Carbon tetrachloride	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Benzene	0.5	ND	ND	ND	ND	0.75	0.85	0.69	3	6	ND	0.85	0.34 [1]	YES	NA	YES
1,2-Dichloroethane	0.5	ND	ND	ND	ND	ND	6.3	6.2	2	6	ND	6.3	0.12 [1]	YES	NA	YES
1,4-dioxane	20	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Trichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Methylcyclohexane	0.5	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bromodichloromethane	0.5	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
4-Methyl-2-pentanone	5.0	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Toluene	0.5	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
trans-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1,2-Trichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO

ORIGINAL

Table 4B. Occurrence, Distribution and Selection of COC's
Groundwater
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/L) GW-1	GW-2	GW-3	GW-4	GW-5	GW-6 (FD of GW-5)	Frequency Detects	Samples	Concentration Min (ug/L)	Max (ug/L)	Action Level Concentration (ug/L)	COC?	Background Concentration (ug/L)	HSL Observed Release?
Volatile Organic Compounds															
Tetrachloroethene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
2-Hexanone	5.0	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Dibromochloromethane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dibromoethane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Chlorobenzene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Ethylbenzene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
o-Xylene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
m,p-Xylene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Styrene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Bromoform	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
Isopropylbenzene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,3-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2-Dibromo-3-chloropropane	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2,4-Trichlorobenzene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO
1,2,3-Trichlorobenzene	0.5	ND	ND	ND	ND	ND	ND	0	6	ND	ND	NA	NO	NA	NO

NOTES:

ND Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
CRDL Contract Required Detection Limit.
1 USEPA Region III, Tap Water Risk Based Concentration, April 2007.
BG Background sample is not available.
B Not detected substantially above the level reported in laboratory or field blanks.

Table 4C. Occurrence, Distribution and Selection of COC's
Groundwater
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/L) GW-1	GW-3	GW-4	GW-5	GW-6 (FD of GW-5)	Frequency Detects	Samples	Concentration Min (ug/L)	Max (ug/L)	Action Level Concentration (ug/L)	COC ?	Background Concentration (ug/L)	IRS Observed Release?
Semi-Volatile Organic Compounds														
Benzaldehyde	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Phenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Bis(2-chloroethyl)ether	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2-Chlorophenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2-Methylphenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,2'-Oxybis(1-chloropropane)	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Acetophenone	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
4-Methylphenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
N-Nitroso-di-n-propylamine	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Hexachloroethane	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Nitrobenzene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Isophorone	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2-Nitrophenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,4-Dimethylphenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Bis(2-chloroethoxy)methane	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,4-Dichlorophenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Naphthalene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
4-Chloroaniline	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Hexachlorobutadiene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Caprolactam	5	96	1,300	280	830	430	5	5	96	1,300	18,000 [1]	NO	NA	YES
4-Chloro-3-methylphenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2-Methylnaphthalene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Hexachlorocyclopentadiene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,4,6-Trichlorophenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,4,5-Trichlorophenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
1,1'-Biphenyl	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2-Chloronaphthalene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2-Nitroaniline	10	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Dimethylphthalate	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,6-Dinitrotoluene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Acenaphthylene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
3-Nitroaniline	10	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Acenaphthene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,4-Dinitrophenol	10	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
4-Nitrophenol	10	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Dibenzofuran	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,4-Dinitrotoluene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Diethylphthalate	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Fluorene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
4-Chlorophenyl-phenylether	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO

ORIGINAL

Table 4C. Occurrence, Distribution and Selection of COC's
Groundwater
Markay Chemicals CERCLIS Site
St. Albans, Kanawha County, West Virginia

COPC	CRDL	Concentration (ug/L) GW-1	GW-3	GW-4	GW-5	GW-6 (FD of GW-5)	Frequency Detects	Samples	Concentration Min (ug/L)	Max (ug/L)	Action Level Concentration (ug/L)	COC ?	Background Concentration (ug/L)	HRS Observed Release?
Semi-Volatile Organic Compounds														
4-Nitroaniline	10	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
4,6-Dinitro-2-methylphenol	10	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
N-Nitrosodiphenylamine	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
1,2,4,5-Tetrachlorobenzene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
4-Bromophenyl-phenylether	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Hexachlorobenzene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Atrazine	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Pentachlorophenol	10	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Phenanthrene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Anthracene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Carbazole	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Di-n-butylphthalate	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Fluoranthene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Pyrene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Butylbenzylphthalate	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
3,3'-Dichlorobenzidine	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Benzo(a)anthracene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Chrysene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Bis(2-ethylhexyl)phthalate	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Di-n-octylphthalate	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Benzo(b)fluoranthene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Benzo(k)fluoranthene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Benzo(a)pyrene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Indeno(1,2,3-cd)pyrene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Dibenzo(a,h)anthracene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
Benzo(g,h,i)perylene	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO
2,3,4,6-Tetrachlorophenol	5	ND	ND	ND	ND	ND	0	5	ND	ND	NA	NO	NA	NO

NOTES:

ND. Not detected at a concentration greater than the Contract Required Detection Limit (CRDL).
NA Not Applicable or available.
CRDL Contract Required Detection Limit.
1 USEPA Region III, Tap Water Risk Based Concentration, April 2007.
BG Background sample is not available.

Appendix 1,

Organic Data Validation Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
ENVIRONMENTAL SCIENCE CENTER
701 MAPES ROAD
FORT MEADE, MARYLAND 20755-5350

DATE : July 6, 2007

SUBJECT: Region III Data QA Review

FROM : Khin-Cho Thaung
Region III ESAT RPO (3EA20)

TO : James Hargett
Regional Project Manager (3HS12)

Attached is the organic data validation report for the Markay Chemicals site (Case # 36456 SDG #C0001, C0007) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2743.

Attachment

cc: Pamela Hayes (WV Dep)

TO File #: 0007 TDF#: 0675

ORIGINAL

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Lockheed Martin Enterprise Solutions & Services
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-530
Telephone 410-305-3037 Facsimile 410-305-3597

DATE: July 5, 2007

SUBJECT: Level M2 Organic Data Validation for Case 36241
SDGs: C0001 and C0007
Site: Markay Chemical

FROM: Shilpa Udani
Organic Data Reviewer

Mahboobeh Mecanic
Senior Oversight Chemist

TO: Khin-Cho Thaung
ESAT Region 3 Project Officer

OVERVIEW

Case 36241 Sample Delivery Groups (SDGs) C0001 and C0007, consisted of seven (7) aqueous samples analyzed for trace volatile and semivolatile and eighteen (18) soil samples analyzed for volatile and semivolatile, three (3) aqueous trip blanks and one (1) aqueous sample analyzed for volatile compounds only. All samples submitted to KAP Technologies, Inc. (KAP) for analyses. The sample set included two (2) rinsate blanks and three (3) duplicate pairs. Samples were analyzed according to Contract Laboratory Program (CLP) Statement of Work (SOW) SOM01.1 through Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to Region 3 Innovative Approaches for Validation of Organic Data, Level M2. This level of review includes assessment of all Quality Assurance/Quality Control (QA/QC) data and review of chromatograms, but excludes review of raw data and sample spectra. No technical problems were noted based on level of review requested.

MAJOR PROBLEMS

- Relative Response Factors (RRFs) in trace volatile and volatile initial and continuing calibrations were less than 0.005 for 1,4-dioxane. Quantitation limits for this compound in affected samples were rejected and qualified "R" on the Data Summary Forms (DSFs).

- The following samples reported recoveries of Deuterated Monitoring Compounds (DMCs) less than ten percent (<10%). Quantitation limits for compounds associated with these DMCs were rejected and qualified "R" on the DSFs.

SDG	Fraction	Sample	DMC
C0001	SVOC	C0003	2,4-Dichlorophenol-d3
C0007	SVOC	C0021	4-Chloroaniline-d4

MINOR PROBLEMS

- Several compounds failed precision criteria [Percent Relative Standard Deviations (%RSDs) and/or Percent Differences (%Ds)] in the trace volatile, volatile and semivolatile initial and/or continuing calibrations. Positive results reported for these compounds in affected samples were qualified "J" on the DSFs unless superseded by "B". The imprecision did not exceed fifty percent (50%) criteria; therefore, quantitation limits were not qualified.

- Internal standard (IS) area counts were less than the lower control limit in the following samples listed. All samples were reanalyzed with similar recoveries except for volatile sample C0013 (SDG C0007) which was not reanalyzed as required. The initial analyses results for these samples were reported on the DSFs. Reported results and quantitation limits in these samples were qualified "J" and "UJ", respectively, on the DSFs unless superseded by "R".

SDG	Fraction	Samples	Internal Standard
C0007	VOC	C0013, C0014, C0016, C0017, C0019, C0020	1,4-Dichlorobenzene-d4
		C0015	Chlorobenzene-d5, 1,4-Dichlorobenzene-d4
	SVOC	C0015	1,4-Dichlorobenzene-d4, Naphthalene-d8
		C0017	1,4-Dichlorobenzene-d4, Naphthalene-d8, Acenapthene-d10

- Internal standard (IS) area counts for chlorobenzene-d5 and 1,4-dichlorobenzene-d4 were less than the lower control limit in volatile sample C0018 (SDG C0007). This sample was reanalyzed with recovery of 1,4-dichlorobenzene-d4 outside the lower control limit. The reanalysis results for this sample were reported on the DSF. Quantitation limits for compounds associated with this internal standard were qualified "UJ" on the DSF.

- The following samples had recoveries of DMCs outside the upper Quality Control (QC) limits. The positive results associated with these DMCs were qualified "K" unless superseded by "B" or "J" on the DSFs.

SDG	Fraction	Samples	DMC
C0001	Trace VOC	C0032	Chloroform-d
C0007	VOC	C0015	1,2-Dichloroethane-d4
		C0018RE	Toluene-d8

- The following samples had recoveries of DMCs outside the lower QC limits. Quantitation limits for compounds associated with these DMCs were qualified "UL" on the DSFs unless superseded by "R".

SDG	Fraction	Samples	DMC
C0001	Trace VOC	C0002, C0003, C0006, C0031	trans-1,3-Dichloropropene-d4
		C0002	1,4-Dioxane-d8
	SVOC	C0004, C0006	2,4-Dichlorophenol-d3
		C0003, C0004, C0005, C0006	Pyrene-d10
		C0004, C0005, C0006	Benzo(a)pyrene-d12
C0007	SVOC	C0009, C0017, C0018, C0019	Pyrene-d10

NOTES

- Concentration of target compound found in the analysis of trip, rinsate, method and storage blanks are listed below. Samples with concentration of these common laboratory contaminants less than ten times (<10X) blank concentrations have been qualified "B" on the DSFs.

SDG	Blank	Compound	Concentration	Affected Samples
C0001	Method (VBLKDZ)	Methylene chloride	0.85 ug/L	C0002, C0003
	Trip (C0030)	Acetone	13 ug/L	C0002, C0003
C0007	Method (VBLK80)	Methylene chloride	3.9 J ug/Kg	C0008, C0015
	Method (VBLK82)	Methylene chloride	2.5 J ug/Kg	C0021, C0022, C0023, C0025
	Trip (C0030)	Acetone	13 ug/L	C0012, C0019, C0020, C0021

- The concentrations of several compounds in samples listed below exceeded the calibration range in the initial analyses. These samples were diluted and re-analyzed to bring the concentrations of these compounds within the calibration range. Results for these compounds are reported from the diluted analyses and annotated with a (+) symbol on the DSFs by the reviewer.

SDG	Fraction	Samples	Dilution Factor	Compounds
C0001	Trace VOC	C0005, C0006	10 X	1,1-Dichloroethane
	SVOC	C0001	4 X	Caprolactam
		C0003	100 X	Caprolactam
		C0004	8 X	Caprolactam
		C0005	20 X	Caprolactam
		C0006	10 X	Caprolactam

- The following samples had recoveries of DMCs outside the QC limits. Since the associated sample results were either not reported from dilution or reanalysis analysis or were non-detects, no data qualifying action was taken by data reviewer.

SDG	Fraction	Sample	DMCs
C0001	Trace VOC	C0032	1,2-Dichloroethane-d4
		C0004, C0030	1,2-Dichlorobenzene-d4
		C0005DL	1,4-Dioxane-d8
	VOC	C0013, C0015, C0015RE, C0018, C0018RE	Vinyl chloride-d3
		C0013, C0015, C0015RE, C0016RE, C0017RE, C0018, C0018RE, C0019, C0020	Chloroethene-d2
		C0015	Chloroform-d
		C0013, C0017RE, C0018	1,2-Dichloroethane-d4
		C0013, C0014, C0015, C0016, C0017, C0018, C0020, C0015RE, C0016RE, C0017RE, C0018RE, C0020RE	Benzene-d6
		C0013, C0014, C0015, C0016, C0017, C0018, C0019, C0015RE, C0016RE, C0017RE, C0018RE, C0020RE	1,2-Dichloropropane-d6
		C0013, C0014, C0015, C0016RE	Toluene-d8
		C0013, C0015, C0015RE, C0017RE, C0020RE, C0018, C0018RE	trans-1,3-Dichloropropene-d4
		C0018	2-Hexanone-d5
		C0015	1,4-Dioxane-d8
	SVOC	C0017RE	Benzo(a)pyrene-d12

- Semivolatile samples C0011 and C0018 (SDG C0007) were collected on 6/13/2007and extracted on 06/25/2007. The aqueous technical holding time of (7) days from time of sample collection was exceeded by five (5) days. Due to the stability of semivolatile compounds in the soil matrix, no data qualifying action was taken by data reviewer based on holding time outlier unless the holding time of fourteen (14) days was exceeded. The contractual holding time of ten (10) days from Validated Time of Sample Receipt (VTSR) was exceeded by one (1) day.

- Internal standard area counts for phenanthrene-d10, chrysene-d12 and perylene-d12 were outside the lower control limit for initial calibration standard SSTD02048 (20 ug/L) (SDG C0007). No data were qualified based on these outliers.

- Trip and rinsate blanks were utilized to assess field contamination based on corresponding sampling dates for this case.

- Encore tubes were used for collection of volatile soil samples in this sample set. All samples were transferred and kept frozen until time of analysis. No action was taken by the reviewer.

- A sample mass other than five (5) grams was used for samples associated with this case. Dilution factors reported on DSFs reflect actual sample masses used.

- Results for volatile and/or semivolatile field duplicate pair, samples C0006/C0007 (SDG C0001), C0008/C0012 and C0022/C0023 (SDG C0007), were comparable for all compounds in each fraction except for benzaldehyde in semivolatile samples pair C0008/C0012.

- No positive results were reported in the analysis of semivolatile duplicate pair C0022/C0023 (SDG C0007).

- Tentatively Identified Compounds (TICs) were reviewed during data validation. Compounds identified as blank contaminants or compounds from other fraction were crossed off TIC Form Is by the reviewer. TIC Form Is for samples in which TICs were identified are included in Appendix E.

- Compounds detected below Contract Required Quantitation Limits (CRQLs) were qualified "J" unless superseded by "B" on the DSFs.

All data for Case 36456, SDGs C0001 and C0007, were reviewed in accordance with Region III Modifications to the National Functional Guidelines for Organic Data Review, September 1994.

ATTACHMENTS

1)	Appendix A	Glossary of Data Qualifier Terms
2)	Appendix B	Data Summary Forms
3)	Appendix C	Chain-of-Custody Records
4)	Appendix D	Laboratory Case Narrative
5)	Appendix E	Tentatively Identified Compounds (TICs)

DCN: 36456 – C0001 and C0007

Appendix A

Glossary of Data Qualifier Codes

GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of compounds)

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

NO CODE = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.

Q = No analytical result.

Appendix B

Data Summary Forms

ORIGINAL

DATA SUMMARY FORM: Trace Volatiles Page __1__ of __26__

Case #: 36456 SDG : C0001 Number of Soil Samples : 0
Site : MARKAY CHEMICALS Number of Water Samples : 11
Lab. : KAP

Sample Number :		C0001		C0002		C0003		C0004		C0005	
Sampling Location :		GW1		GW2		GW3		GW4		GW5	
Field QC :										Dup. of C0006	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/13/2007		6/13/2007	
Time Sampled :		13:00		15:15		14:00		09:00		11:00	
pH :		< 2		< 2		< 2		< 2		< 2	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0 / 10	
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	0.50										
Chloromethane	0.50										
*Vinyl chloride	0.50										
Bromomethane	0.50										
Chloroethane	0.50										
Trichlorofluoromethane	0.50										
*1,1-Dichloroethene	0.50									2.1	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50							2.9		2.0	
Acetone	5.0			10	B	4.6	B				
Carbon disulfide	0.50	0.85						0.70			
Methyl acetate	0.50										
*Methylene chloride	0.50	1.4		0.98	B	1.2	B				
trans-1,2-Dichloroethene	0.50									1.1	
Methyl tert-butyl ether	0.50										
1,1-Dichloroethane	0.50							2.8		67 +	
cis-1,2-Dichloroethene	0.50									15	
*2-Butanone	5.0										
Bromochloromethane	0.50										
Chloroform	0.50										
*1,1,1-Trichloroethane	0.50									5.8	
Cyclohexane	0.50										
*Carbon tetrachloride	0.50										
*Benzene	0.50							0.75		0.85	
*1,2-Dichloroethane	0.50									6.3	
1,4-Dioxane	20		R		R		R		R		R
Trichloroethene	0.50										
Methylcyclohexane	0.50										
*1,2-Dichloropropane	0.50										
Bromodichloromethane	0.50										
cis-1,3-Dichloropropene	0.50				UL		UL				
4-Methyl-2-pentanone	5.0										
*Toluene	0.50										
trans-1,3-Dichloropropene	0.50				UL		UL				

"+" = Result is reported from diluted analysis.

Case #: 36456 SDG : C0001
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0001		C0002		C0003		C0004		C0005	
Sampling Location :		GW1		GW2		GW3		GW4		GW5	
Field QC :										Dup. of C0006	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/13/2007		6/13/2007	
Time Sampled :		13:00		15:15		14:00		09:00		11:00	
pH :		< 2		< 2		< 2		< 2		< 2	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0 / 10	
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,2-Trichloroethane	0.50				UL		UL				
*Tetrachloroethene	0.50										
2-Hexanone	5.0										
Dibromochloromethane	0.50										
1,2-Dibromoethane	0.50										
*Chlorobenzene	0.50										
*Ethylbenzene	0.50										
o-Xylene	0.50										
m,p-Xylene	0.50										
*Styrene	0.50										
Bromoform	0.50										
Isopropylbenzene	0.50										
1,1,2,2-Tetrachloroethane	0.50										
*1,3-Dichlorobenzene	0.50										
*1,4-Dichlorobenzene	0.50										
1,2-Dichlorobenzene	0.50										
1,2-Dibromo-3-chloropropane	0.50										
1,2,4-Trichlorobenzene	0.50										
1,2,3-Trichlorobenzene	0.50										

CRQL = Contract Required Quantitation Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS
To calculate sample quantitation limits: (CRQL * Dilution Factor) Revised 09/99

ORIGINAL

DATA SUMMARY FORM: Trace Volatiles Page __3__ of __26__

Case #: 36456 SDG : C0001
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0006		C0027		C0028		C0030		C0031	
Sampling Location :		GW6		SW2		SW3		SW5		SW6	
Field QC :		Dup. of C0005		Rinsate Blank		Rinsate Blank		Trip Blank		Trip Blank	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		6/13/2007		6/12/2007		6/12/2007		6/12/2007		6/12/2007	
Time Sampled :		11:00		14:30		12:00		13:00		15:30	
pH :		< 2		< 2		< 2		< 2		< 2	
Dilution Factor :		1.0 / 10		1.0		1.0		1.0		1.0	
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	0.50										
Chloromethane	0.50										
*Vinyl chloride	0.50										
Bromomethane	0.50										
Chloroethane	0.50	1.8									
Trichlorofluoromethane	0.50										
*1,1-Dichloroethene	0.50	2.1									
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	2.1									
Acetone	5.0							13		6.8	
Carbon disulfide	0.50										
Methyl acetate	0.50			1							
*Methylene chloride	0.50										
trans-1,2-Dichloroethene	0.50	0.81									
Methyl tert-butyl ether	0.50										
1,1-Dichloroethane	0.50	69									
cis-1,2-Dichloroethene	0.50	14									
*2-Butanone	5.0										
Bromochloromethane	0.50										
Chloroform	0.50			10		9.0					
*1,1,1-Trichloroethane	0.50	4.9									
Cyclohexane	0.50										
*Carbon tetrachloride	0.50										
*Benzene	0.50	0.69									
*1,2-Dichloroethane	0.50	6.2									
1,4-Dioxane	4.0		R		R		R		R		R
Trichloroethene	0.50										
Methylcyclohexane	0.50										
*1,2-Dichloropropane	0.50										
Bromodichloromethane	0.50			1.3		1.7					
cis-1,3-Dichloropropene	0.50		UL								UL
4-Methyl-2-pentanone	5.0										
*Toluene	0.50										
trans-1,3-Dichloropropene	0.50		UL								UL

"+" = Result is reported from diluted analysis.

ORIGINAL

DATA SUMMARY FORM: Trace Volatiles

Case #: 36456 SDG : C0001
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0006		C0027		C0028		C0030		C0031	
Sampling Location :		GW8		SW2		SW3		SW5		SW6	
Field QC :		Dup. of C0005		Rinsate Blank		Rinsate Blank		Trip Blank		Trip Blank	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		6/13/2007		6/12/2007		6/12/2007		6/12/2007		6/12/2007	
Time Sampled :		11:00		14:30		12:00		13:00		15:30	
pH :		< 2		< 2		< 2		< 2		< 2	
Dilution Factor :		1.0 / 10		1.0		1.0		1.0		1.0	
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,2-Trichloroethane	0.50		UL								UL
*Tetrachloroethene	0.50										
2-Hexanone	5.0										
Dibromochloromethane	0.50										
1,2-Dibromoethane	0.50										
*Chlorobenzene	0.50										
*Ethylbenzene	0.50										
o-Xylene	0.50										
m,p-Xylene	0.50										
*Styrene	0.50										
Bromoform	0.50										
Isopropylbenzene	0.50										
1,1,2,2-Tetrachloroethane	0.50										
*1,3-Dichlorobenzene	0.50										
*1,4-Dichlorobenzene	0.50										
1,2-Dichlorobenzene	0.50										
1,2-Dibromo-3-chloropropane	0.50										
1,2,4-Trichlorobenzene	0.50										
1,2,3-Trichlorobenzene	0.50										

CRQL = Contract Required Quantitation Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) Revised 09/99

ORIGINAL

Case #: 36456 SDG : C0001
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0032									
Sampling Location :		SW7									
Field QC :		Trip Blank									
Matrix :		Water									
Units :		ug/L									
Date Sampled :		6/13/2007									
Time Sampled :		09:00									
pH :		< 2									
Dilution Factor :		1.0									
Trace Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	0.50										
Chloromethane	0.50										
*Vinyl chloride	0.50										
Bromomethane	0.50										
Chloroethane	0.50										
Trichlorofluoromethane	0.50										
*1,1-Dichloroethene	0.50										
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50										
Acetone	5.0										
Carbon disulfide	0.50										
Methyl acetate	0.50										
*Methylene chloride	0.50										
trans-1,2-Dichloroethene	0.50										
Methyl tert-butyl ether	0.50										
1,1-Dichloroethane	0.50										
cis-1,2-Dichloroethene	0.50										
*2-Butanone	5.0										
Bromochloromethane	0.50										
Chloroform	0.50	0.9	K								
*1,1,1-Trichloroethane	0.50										
Cyclohexane	0.50										
*Carbon tetrachloride	0.50										
Benzene	0.50										
*1,2-Dichloroethane	0.50										
1,4-Dioxane	50		R								
Trichloroethene	0.50										
Methylcyclohexane	0.50										
*1,2-Dichloropropane	0.50										
Bromodichloromethane	0.50	2.9									
cis-1,3-Dichloropropene	0.50										
4-Methyl-2-pentanone	5.0										
*Toluene	0.50										
trans-1,3-Dichloropropene	0.50										

Case #: 36456 SDG : C0001
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0032									
Sampling Location :		SW7									
Field QC :		Trip Blank									
Matrix :		Water									
Units :		ug/L									
Date Sampled :		6/13/2007									
Time Sampled :		09:00									
pH :		< 2									
Dilution Factor :		1.0									
Trace Volatile Compound	CRQL	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,2-Trichloroethane	0.50										
*Tetrachloroethene	0.50										
2-Hexanone	5.0										
Dibromochloromethane	0.50										
1,2-Dibromoethane	0.50										
*Chlorobenzene	0.50										
*Ethylbenzene	0.50										
o-Xylene	0.50										
m,p-Xylene	0.50										
*Styrene	0.50										
Bromoform	0.50										
Isopropylbenzene	0.50										
1,1,2,2-Tetrachloroethane	0.50										
*1,3-Dichlorobenzene	0.50										
*1,4-Dichlorobenzene	0.50										
1,2-Dichlorobenzene	0.50										
1,2-Dibromo-3-chloropropane	0.50										
1,2,4-Trichlorobenzene	0.50										
1,2,3-Trichlorobenzene	0.50										

CRQL = Contract Required Quantitation Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS
To calculate sample quantitation limits: (CRQL * Dilution Factor) Revised 09/99

ORIGINAL

DATA SUMMARY FORM: Volatiles

Case #: 36456
Site :
Lab. :

SDG : C0007
MARKAY CHEMICALS
KAP

Number of Soil Samples : 18
Number of Water Samples : 0

Sample Number :		C0007		C0008		C0009		C0010		C0011	
Sampling Location :		SB1		SB2		SB3		SB4		SB5	
Field QC :				Dup. of C0012							
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/12/2007		6/13/2007	
Time Sampled :		11:15		10:00		13:20		15:40		10:25	
%Moisture :		19		21		21		21		20	
Dilution Factor :		1.22		1.06		1.04		1.04		1.0	
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	5.0										
Chloromethane	5.0										
Vinyl chloride	5.0										
Bromomethane	5.0										
Chloroethane	5.0										
Trichlorofluoromethane	5.0										
1,1-Dichloroethene	5.0										
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0										
Acetone	10										
Carbon disulfide	5.0										
Methyl acetate	5.0										
Methylene chloride	5.0			3.7	B						
trans-1,2-Dichloroethene	5.0										
Methyl tert-butyl ether	5.0										
1,1-Dichloroethane	5.0										
cis-1,2-Dichloroethene	5.0										
2-Butanone	10										
Bromochloromethane	5.0										
Chloroform	5.0										
1,1,1-Trichloroethane	5.0										
Cyclohexane	5.0										
Carbon tetrachloride	5.0										
Benzene	5.0										
1,2-Dichloroethane	5.0							6.1	J		
1,4-Dioxane	100		R		R		R		R		
Trichloroethene	5.0										
Methylcyclohexane	5.0										
1,2-Dichloropropane	5.0										
Bromodichloromethane	5.0										
cis-1,3-Dichloropropene	5.0										
4-Methyl-2-pentanone	10										
Toluene	5.0										
trans-1,3-Dichloropropene	5.0										

ORIGINAL

DATA SUMMARY FORM: Volatiles

Case #: 36456 SDG : C0007
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0007		C0008		C0009		C0010		C0011	
Sampling Location :		SB1		SB2		SB3		SB4		SB5	
Field QC :				Dup. of C0012							
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/12/2007		6/13/2007	
Time Sampled :		11:15		10:00		13:20		15:40		10:25	
%Moisture :		19		21		21		21		20	
Dilution Factor :		1.22		1.06		1.04		1.04		1.0	
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,2-Trichloroethane	5.0										
Tetrachloroethene	5.0										
2-Hexanone	10										
Dibromochloromethane	5.0										
1,2-Dibromoethane	5.0										
Chlorobenzene	5.0										
Ethylbenzene	5.0										
o-Xylene	5.0										
m,p-Xylene	5.0										
Styrene	5.0										
Bromoform	5.0										
Isopropylbenzene	5.0										
1,1,2,2-Tetrachloroethane	5.0										
1,3-Dichlorobenzene	5.0										
1,4-Dichlorobenzene	5.0										
1,2-Dichlorobenzene	5.0										
1,2-Dibromo-3-chloropropane	5.0										
1,2,4-Trichlorobenzene	5.0										
1,2,3-Trichlorobenzene	5.0										

CRQL = Contract Required Quantitation Limit SEE NARRATIVE FOR CODE DEFINITIONS
To calculate sample quantitation limits: (CRQL * Dilution Factor) / [(100 - %Moisture) / 100] Revised 09/99

ORIGINAL

DATA SUMMARY FORM: Volatiles

Case #: 36456 SDG : C0007
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0012		C0013		C0014		C0015		C0016	
Sampling Location :		SB6		SS1		SS2		SS3		SS4	
Field QC :		Dup. of C0008									
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/12/2007		6/12/2007	
Time Sampled :		10:00		11:30		12:40		13:20		14:00	
%Moisture :		20		11		16		20		14	
Dilution Factor :		1.22		1.35		1.14		1.22		1.19	
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	5.0										
Chloromethane	5.0										
Vinyl chloride	5.0										
Bromomethane	5.0										
Chloroethane	5.0										
Trichlorofluoromethane	5.0										
1,1-Dichloroethene	5.0										
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0										
Acetone	10	19	B								
Carbon disulfide	5.0										
Methyl acetate	5.0										
Methylene chloride	5.0							4.6	B		
trans-1,2-Dichloroethene	5.0										
Methyl tert-butyl ether	5.0										
1,1-Dichloroethane	5.0										
cis-1,2-Dichloroethene	5.0										
2-Butanone	10										
Bromochloromethane	5.0										
Chloroform	5.0										
1,1,1-Trichloroethane	5.0								UJ		
Cyclohexane	5.0								UJ		
Carbon tetrachloride	5.0								UJ		
Benzene	5.0								UJ		
1,2-Dichloroethane	5.0										
1,4-Dioxane	100		R		R		R		R		R
Trichloroethene	5.0								UJ		
Methylcyclohexane	5.0								UJ		
1,2-Dichloropropane	5.0								UJ		
Bromodichloromethane	5.0								UJ		
cis-1,3-Dichloropropene	5.0								UJ		
4-Methyl-2-pentanone	10								UJ		
Toluene	5.0								UJ		
trans-1,3-Dichloropropene	5.0								UJ		

ORIGINAL

DATA SUMMARY FORM: Volatiles Page __10__ of __26__

Case #: 36456 SDG : C0007
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0012		C0013		C0014		C0015		C0016	
Sampling Location :		SB6		SS1		SS2		SS3		SS4	
Field QC :		Dup. of C0008									
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/12/2007		6/12/2007	
Time Sampled :		10:00		11:30		12:40		13:20		14:00	
%Moisture :		20		11		16		20		14	
Dilution Factor :		1.22		1.35		1.14		1.22		1.19	
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,2-Trichloroethane	5.0								UJ		
Tetrachloroethene	5.0								UJ		
2-Hexanone	10								UJ		
Dibromochloromethane	5.0								UJ		
1,2-Dibromoethane	5.0								UJ		
Chlorobenzene	5.0								UJ		
Ethylbenzene	5.0								UJ		
o-Xylene	5.0								UJ		
m,p-Xylene	5.0								UJ		
Styrene	5.0								UJ		
Bromoform	5.0				UJ		UJ		UJ		UJ
Isopropylbenzene	5.0								UJ		
1,1,2,2-Tetrachloroethane	5.0								UJ		
1,3-Dichlorobenzene	5.0				UJ		UJ		UJ		UJ
1,4-Dichlorobenzene	5.0				UJ		UJ	6.9	J		UJ
1,2-Dichlorobenzene	5.0				UJ		UJ		UJ		UJ
1,2-Dibromo-3-chloropropane	5.0				UJ		UJ		UJ		UJ
1,2,4-Trichlorobenzene	5.0				UJ		UJ		UJ		UJ
1,2,3-Trichlorobenzene	5.0				UJ		UJ		UJ		UJ

CRQL = Contract Required Quantitation Limit SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) / [(100 - %Moisture) / 100] Revised 09/99

ORIGINAL

DATA SUMMARY FORM: Volatiles Page __11__ of __26__

Case #: 36456 SDG : C0007
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0017		C0018RE		C0019		C0020		C0021	
Sampling Location :		SS5		SS6		SS7		SS8		SS9	
Field QC :											
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		6/12/2007		6/13/2007		6/12/2007		6/12/2007		6/12/2007	
Time Sampled :		15:00		08:45		09:45		10:10		09:30	
%Moisture :		24		48		45		37		47	
Dilution Factor :		1.22		1.52		1.19		1.32		1.52	
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	5.0										
Chloromethane	5.0										
Vinyl chloride	5.0										
Bromomethane	5.0										
Chloroethane	5.0										
Trichlorofluoromethane	5.0										
1,1-Dichloroethene	5.0										
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0										
Acetone	10					20	B	54	B	43	B
Carbon disulfide	5.0										
Methyl acetate	5.0					6.2	J				
Methylene chloride	5.0									16	B
trans-1,2-Dichloroethene	5.0										
Methyl tert-butyl ether	5.0										
1,1-Dichloroethane	5.0										
cis-1,2-Dichloroethene	5.0										
2-Butanone	10										
Bromochloromethane	5.0										
Chloroform	5.0										
1,1,1-Trichloroethane	5.0										
Cyclohexane	5.0										
Carbon tetrachloride	5.0										
Benzene	5.0										
1,2-Dichloroethane	5.0										
1,4-Dioxane	100		R				R		R		R
Trichloroethene	5.0			20	K						
Methylcyclohexane	5.0										
1,2-Dichloropropane	5.0										
Bromodichloromethane	5.0										
cis-1,3-Dichloropropene	5.0										
4-Methyl-2-pentanone	10										
Toluene	5.0										
trans-1,3-Dichloropropene	5.0										

ORIGINAL

DATA SUMMARY FORM: Volatiles

Case #: 36456 SDG : C0007
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0017		C0018RE		C0019		C0020		C0021	
Sampling Location :		SS5		SS6		SS7		SS8		SS9	
Field QC :											
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		6/12/2007		6/13/2007		6/12/2007		6/12/2007		6/12/2007	
Time Sampled :		15:00		08:45		09:45		10:10		09:30	
%Moisture :		24		48		45		37		47	
Dilution Factor :		1.22		1.52		1.19		1.32		1.52	
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,2-Trichloroethane	5.0										
Tetrachloroethene	5.0			65	K						
2-Hexanone	10										
Dibromochloromethane	5.0										
1,2-Dibromoethane	5.0										
Chlorobenzene	5.0										
Ethylbenzene	5.0										
o-Xylene	5.0										
m,p-Xylene	5.0										
Styrene	5.0										
Bromoform	5.0		UJ		UJ		UJ		UJ		
Isopropylbenzene	5.0										
1,1,2,2-Tetrachloroethane	5.0										
1,3-Dichlorobenzene	5.0		UJ		UJ		UJ		UJ		
1,4-Dichlorobenzene	5.0		UJ		UJ		UJ		UJ		
1,2-Dichlorobenzene	5.0		UJ		UJ		UJ		UJ		
1,2-Dibromo-3-chloropropane	5.0		UJ		UJ		UJ		UJ		
1,2,4-Trichlorobenzene	5.0		UJ		UJ		UJ		UJ		
1,2,3-Trichlorobenzene	5.0		UJ		UJ		UJ		UJ		

CRQL = Contract Required Quantitation Limit SEE NARRATIVE FOR CODE DEFINITIONS
To calculate sample quantitation limits: (CRQL * Dilution Factor) / [(100 - %Moisture) / 100] Revised 09/99

ORIGINAL

DATA SUMMARY FORM: Volatiles Page __13__ of __26__

Case #: 36456 SDG : C0007
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0022		C0023		C0025					
Sampling Location :		SS10		SS11		SS13					
Field QC :		Dup. of C0023		Dup. of C0022							
Matrix :		Soil		Soil		Soil					
Units :		ug/Kg		ug/Kg		ug/Kg					
Date Sampled :		6/12/2007		6/12/2007		6/12/2007					
Time Sampled :		15:50		15:50		10:40					
%Moisture :		8		10		14					
Dilution Factor :		1.79		1.92		0.96					
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Dichlorodifluoromethane	5.0										
Chloromethane	5.0										
Vinyl chloride	5.0										
Bromomethane	5.0										
Chloroethane	5.0										
Trichlorofluoromethane	5.0										
1,1-Dichloroethene	5.0										
1,1,2-Trichloro-1,2,2-trifluoroethane	5.0										
Acetone	10										
Carbon disulfide	5.0										
Methyl acetate	5.0										
Methylene chloride	5.0	11	B	12	B	4.2	B				
trans-1,2-Dichloroethene	5.0										
Methyl tert-butyl ether	5.0										
1,1-Dichloroethane	5.0										
cis-1,2-Dichloroethene	5.0										
2-Butanone	10										
Bromochloromethane	5.0										
Chloroform	5.0										
1,1,1-Trichloroethane	5.0										
Cyclohexane	5.0										
Carbon tetrachloride	5.0										
Benzene	5.0										
1,2-Dichloroethane	5.0										
1,4-Dioxane	100		R		R		R				
Trichloroethene	5.0										
Methylcyclohexane	5.0										
1,2-Dichloropropane	5.0										
Bromodichloromethane	5.0										
cis-1,3-Dichloropropene	5.0										
4-Methyl-2-pentanone	10										
Toluene	5.0										
trans-1,3-Dichloropropene	5.0										

ORIGINAL

DATA SUMMARY FORM: Volatiles

Case #: 36456 SDG : C0007
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0022		C0023		C0025					
Sampling Location :		SS10		SS11		SS13					
Field QC :		Dup. of C0023		Dup. of C0022							
Matrix :		Soil		Soil		Soil					
Units :		ug/Kg		ug/Kg		ug/Kg					
Date Sampled :		6/12/2007		6/12/2007		6/12/2007					
Time Sampled :		15:50		15:50		10:40					
%Moisture :		8		10		14					
Dilution Factor :		1.79		1.92		0.98					
Volatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,2-Trichloroethane	5.0										
Tetrachloroethene	5.0										
2-Hexanone	10										
Dibromochloromethane	5.0										
1,2-Dibromoethane	5.0										
Chlorobenzene	5.0										
Ethylbenzene	5.0										
o-Xylene	5.0										
m,p-Xylene	5.0										
Styrene	5.0										
Bromoform	5.0										
Isopropylbenzene	5.0										
1,1,2,2-Tetrachloroethane	5.0										
1,3-Dichlorobenzene	5.0										
1,4-Dichlorobenzene	5.0										
1,2-Dichlorobenzene	5.0										
1,2-Dibromo-3-chloropropane	5.0										
1,2,4-Trichlorobenzene	5.0										
1,2,3-Trichlorobenzene	5.0										

CRQL = Contract Required Quantitation Limit SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) / [(100 - %Moisture) / 100] Revised 09/99

ORIGINAL

DATA SUMMARY FORM: BNA

Case #: 36456 SDG : C0001 Number of Soil Samples : 0
Site : MARKAY CHEMICALS Number of Water Samples : 7
Lab. : KAP

Sample Number :		C0001		C0003		C0004		C0005		C0006	
Sampling Location :		GW1		GW3		GW4		GW5		GW6	
Field QC :								Dup. of C0006		Dup. of C0005	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		6/12/2007		6/12/2007		6/13/2007		6/13/2007		6/13/2007	
Time Sampled :		13:00		14:00		09:00		11:00		11:00	
Dilution Factor :		1.0 / 4.0		1.0 / 100		1.0 / 8.0		1.0 / 20		1.0 / 10	
Semivolatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	5.0										
Phenol	5.0										
Bis(2-chloroethyl)ether	5.0										
2-Chlorophenol	5.0										
2-Methylphenol	5.0										
2,2'-Oxybis(1-chloropropane)	5.0										
Acetophenone	5.0										
4-Methylphenol	5.0										
N-Nitroso-di-n-propylamine	5.0										
Hexachloroethane	5.0										
Nitrobenzene	5.0										
Isophorone	5.0										
2-Nitrophenol	5.0										
2,4-Dimethylphenol	5.0										
Bis(2-chloroethoxy)methane	5.0										
2,4-Dichlorophenol	5.0				R		UL				UL
Naphthalene	5.0										
4-Chloroaniline	5.0										
Hexachlorobutadiene	5.0				R		UL				UL
Caprolactam	5.0	96 +		1300 +		280 +		830 +		430 +	
4-Chloro-3-methylphenol	5.0				R		UL				UL
2-Methylnaphthalene	5.0										
Hexachlorocyclopentadiene	5.0										
2,4,6-Trichlorophenol	5.0				R		UL				UL
2,4,5-Trichlorophenol	5.0				R		UL				UL
1,1'-Biphenyl	5.0										
2-Chloronaphthalene	5.0										
2-Nitroaniline	10										
Dimethylphthalate	5.0										
2,6-Dinitrotoluene	5.0										
Acenaphthylene	5.0										
3-Nitroaniline	10										
Acenaphthene	5.0										

"+" = Results are reported from diluted analyses.

Case #: 36456 SDG : C0001
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0001		C0003		C0004		C0005		C0006	
Sampling Location :		GW1		GW3		GW4		GW5		GW6	
Field QC :								Dup. of C0006		Dup. of C0005	
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		6/12/2007		6/12/2007		6/13/2007		6/13/2007		6/13/2007	
Time Sampled :		13:00		14:00		09:00		11:00		11:00	
Dilution Factor :		1.0 / 4.0		1.0 / 100		1.0 / 8.0		1.0 / 20		1.0 / 10	
Semivolatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
2,4-Dinitrophenol	10										
4-Nitrophenol	10										
Dibenzofuran	5.0										
2,4-Dinitrotoluene	5.0										
Diethylphthalate	5.0										
Fluorene	5.0										
4-Chlorophenyl-phenylether	5.0										
4-Nitroaniline	10										
4,6-Dinitro-2-methylphenol	10										
N-Nitrosodiphenylamine	5.0										
1,2,4,5-Tetrachlorobenzene	5.0				R		UL				UL
4-Bromophenyl-phenylether	5.0										
*Hexachlorobenzene	5.0										
Atrazine	5.0										
*Pentachlorophenol	10				R		UL				UL
Phenanthrene	5.0										
Anthracene	5.0										
Carbazole	5.0										
Di-n-butylphthalate	5.0										
Fluoranthene	5.0				UL		UL		UL		UL
Pyrene	5.0				UL		UL		UL		UL
Butylbenzylphthalate	5.0										
3,3'-Dichlorobenzidine	5.0										
Benzo(a)anthracene	5.0				UL		UL		UL		UL
Chrysene	5.0				UL		UL		UL		UL
Bis(2-ethylhexyl)phthalate	5.0										
Di-n-octylphthalate	5.0										
Benzo(b)fluoranthene	5.0						UL		UL		UL
Benzo(k)fluoranthene	5.0						UL		UL		UL
Benzo(a)pyrene	5.0						UL		UL		UL
Indeno(1,2,3-cd)pyrene	5.0						UL		UL		UL
Dibenzo(a,h)anthracene	5.0						UL		UL		UL
Benzo(g,h,i)perylene	5.0						UL		UL		UL
2,3,4,6-Tetrachlorophenol	5.0				R		UL				UL

CRQL = Contract Required Quantitation Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) Revised 09/99

ORIGINAL

DATA SUMMARY FORM: BNA

Case #: 36456 SDG : C0001
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0027		C0028							
Sampling Location :		SW2		SW3							
Field QC :		Rinsate Blank		Rinsate Blank							
Matrix :		Water		Water							
Units :		ug/L		ug/L							
Date Sampled :		6/12/2007		6/12/2007							
Time Sampled :		14:30		12:00							
Dilution Factor :		1.0		1.0							
Semivolatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	5.0										
Phenol	5.0										
Bis(2-chloroethyl)ether	5.0										
2-Chlorophenol	5.0										
2-Methylphenol	5.0										
2,2'-Oxybis(1-chloropropane)	5.0										
Acetophenone	5.0										
4-Methylphenol	5.0										
N-Nitroso-di-n-propylamine	5.0										
Hexachloroethane	5.0										
Nitrobenzene	5.0										
Isophorone	5.0										
2-Nitrophenol	5.0										
2,4-Dimethylphenol	5.0										
Bis(2-chloroethoxy)methane	5.0										
2,4-Dichlorophenol	5.0										
Naphthalene	5.0										
4-Chloroaniline	5.0										
Hexachlorobutadiene	5.0										
Caprolactam	5.0			2.8	J						
4-Chloro-3-methylphenol	5.0										
2-Methylnaphthalene	5.0										
Hexachlorocyclopentadiene	5.0										
2,4,6-Trichlorophenol	5.0										
2,4,5-Trichlorophenol	5.0										
1,1'-Biphenyl	5.0										
2-Chloronaphthalene	5.0										
2-Nitroaniline	10										
Dimethylphthalate	5.0										
2,6-Dinitrotoluene	5.0										
Acenaphthylene	5.0										
3-Nitroaniline	10										
Acenaphthene	5.0										

ORIGINAL

DATA SUMMARY FORM: BNA Page __18__ of __26__

Case #: 36456 SDG : C0001
Site : MARKAY CHEMICALS
Lab. : KAP

Sample Number :		C0027		C0028							
Sampling Location :		SW2		SW3							
Field QC :		Rinsate Blank		Rinsate Blank							
Matrix :		Water		Water							
Units :		ug/L		ug/L							
Date Sampled :		6/12/2007		6/12/2007							
Time Sampled :		14:30		12:00							
Dilution Factor :		1.0		1.0							
Semivolatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
2,4-Dinitrophenol	10										
4-Nitrophenol	10										
Dibenzofuran	5.0										
2,4-Dinitrotoluene	5.0										
Diethylphthalate	5.0										
Fluorene	5.0										
4-Chlorophenyl-phenylether	5.0										
4-Nitroaniline	10										
4,6-Dinitro-2-methylphenol	10										
N-Nitrosodiphenylamine	5.0										
1,2,4,5-Tetrachlorobenzene	5.0										
4-Bromophenyl-phenylether	5.0										
*Hexachlorobenzene	5.0										
Atrazine	5.0										
*Pentachlorophenol	10										
Phenanthrene	5.0										
Anthracene	5.0										
Carbazole	5.0										
Di-n-butylphthalate	5.0										
Fluoranthene	5.0										
Pyrene	5.0										
Butylbenzylphthalate	5.0										
3,3'-Dichlorobenzidine	10										
Benzo(a)anthracene	5.0										
Chrysene	5.0										
Bis(2-ethylhexyl)phthalate	5.0										
Di-n-octylphthalate	5.0										
Benzo(b)fluoranthene	5.0										
Benzo(k)fluoranthene	5.0										
Benzo(a)pyrene	5.0										
Indeno(1,2,3-cd)pyrene	5.0										
Dibenzo(a,h)anthracene	5.0										
Benzo(g,h,i)perylene	5.0										
2,3,4,6-Tetrachlorophenol	5.0										

CRQL = Contract Required Quantitation Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) Revised 09/99

Case #: 38458 SDG : C0007 Number of Soil Samples : 18
Site : MARKAY CHEMICALS Number of Water Samples : 0
Lab. : KAP

Sample Number :		C0007		C0008		C0009		C0010		C0011	
Sampling Location :		SB1		SB2		SB3		SB4		SB5	
Field QC :				Dup. of C0012							
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/12/2007		6/13/2007	
Time Sampled :		11:15		10:00		13:20		15:40		10:25	
%Moisture :		19		21		21		21		20	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	170										
Phenol	170										
Bis(2-chloroethyl)ether	170										
2-Chlorophenol	170										
2-Methylphenol	170										
2,2'-Oxybis(1-chloropropane)	170										
Acetophenone	170										
4-Methylphenol	170										
N-Nitroso-di-n-propylamine	170										
Hexachloroethane	170										
Nitrobenzene	170										
Isophorone	170										
2-Nitrophenol	170										
2,4-Dimethylphenol	170										
Bis(2-chloroethoxy)methane	170										
2,4-Dichlorophenol	170										
Naphthalene	170										
4-Chloroaniline	170										
Hexachlorobutadiene	170										
Caprolactam	170										
4-Chloro-3-methylphenol	170										
2-Methylnaphthalene	170										
Hexachlorocyclopentadiene	170										
2,4,6-Trichlorophenol	170										
2,4,5-Trichlorophenol	170										
1,1'-Biphenyl	170										
2-Chloronaphthalene	170										
2-Nitroaniline	330										
Dimethylphthalate	170										
2,6-Dinitrotoluene	170										
Acenaphthylene	170										
3-Nitroaniline	330										
Acenaphthene	170										

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0031

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0547.07

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: A09251

Level: (TRACE or LOW/MED) TRACE Date Received: 06/13/2007

% Moisture: not dec. _____ Date Analyzed: 06/14/2007

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.09	0.78	J
02	~~Unknown-02~~	~~Unknown-02~~	~~10.90~~	~~7.7~~	~~J~~
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

SU 06/29/07.

SOM01.1 (5/2005)

ORIGINAL

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0032

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0549.04

Sample wt/vol: 25.00 (g/mL) ML Lab File ID: A09263

Level: (TRACE or LOW/MED) TRACE Date Received: 06/14/2007

% Moisture: not dec. _____ Date Analyzed: 06/15/2007

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L Purge Volume: 25.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.13	14	J
02		Unknown-02	10.90	9.2	J
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

SU 06/29/07.

SOM01.1 (5/2005)

ORIGINAL

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0013

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.06

Sample wt/vol: 3.700 (g/mL) G Lab File ID: B09799

Level: (TRACE or LOW/MED) LOW Date Received: 06/13/2007

% Moisture: not dec. 11 Date Analyzed: 06/13/2007

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	10.09	63	J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

ORIGINAL

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0017

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.10

Sample wt/vol: 4.100 (g/mL) G Lab File ID: B09804

Level: (TRACE or LOW/MED) LOW Date Received: 06/13/2007

% Moisture: not dec. 24 Date Analyzed: 06/13/2007

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	10.08	60	J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

ORIGINAL

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0021

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.13

Sample wt/vol: 3.300 (g/mL) G Lab File ID: B09823

Level: (TRACE or LOW/MED) LOW Date Received: 06/13/2007

% Moisture: not dec. 47 Date Analyzed: 06/14/2007

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	22.15	330	J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

ORIGINAL

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0025

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.16

Sample wt/vol: 5.200 (g/mL) G Lab File ID: B09820

Level: (TRACE or LOW/MED) LOW Date Received: 06/13/2007

% Moisture: not dec. 14 Date Analyzed: 06/14/2007

GC Column: RTX-VMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	10.09	43	J
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0001

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0547.01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19059

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/23/2007

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.68	3.3	J
02	000301-02-0	9-Octadecenamide, (Z)-	13.45	7.1	NJ
03		Unknown-02	13.52	4.3	J
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0003

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0547.03

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19060

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/23/2007

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	3.20	4.5	J
02		Unknown-02	12.00	9.6	J
03		Unknown-03	12.01	8.1	J
04	005776-79-4	1,8-Diazacyclotetradecane-2,9	12.02	3.7	NJ
05		Unknown-04	12.04	12	J
06	000301-02-0	9-Octadecenamide, (Z)-	13.45	7.4	NJ
07		Unknown-05	15.93	6.3	J
08		Unknown-06	15.93	9.6	J
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0003DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0547.03DL

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19066

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/23/2007

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 100.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	13.81	2000	DJ
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0004

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0549.01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19032

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/14/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.08	4.1	J
02		Unknown-02	4.24	6.9	J
03		Unknown-03	6.05	3.9	J
04	000109-21-7	Butanoic acid, butyl ester	6.29	7.0	NJB
05	000057-10-3	n-Hexadecanoic acid	10.85	3.1	NJ
06	010544-50-0	Cyclic octaatomic sulfur	11.34	3.7	NJ
07	000057-11-4	Octadecanoic acid	11.61	3.4	NJ
08		Unknown-04	12.00	13	J
09	000112-84-5	13-Docosenamide, (Z)	13.46	5.2	NJB
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

Su 06/29/07

SOM01.1 (5/2005)

0548

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0005

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0549.02

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19033

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/14/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.09	4.9	J
02	000057-10-3	n-Hexadecanoic acid	10.86	10	NJ
03	000057-11-4	Octadecanoic acid	11.61	4.2	NJ
04	~~000111-06-8~~	~~Hexadecanoic acid, butyl ester~~	~~11.69~~	~~21~~	~~NJB~~
05		Unknown-02	12.01	6.3	J
06	~~000112-84-5~~	~~13-Docosenamide, (Z)-~~	~~13.46~~	~~19~~	~~NJB~~
07	007683-64-9	Squalene	13.54	6.0	NJ
08		Unknown-03	14.39	4.2	J
09		Unknown-04	15.96	5.1	J
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	4.6	J

[2] EPA-designated Registry Number.

su 06/29/07.

SOM01.1 (5/2005)

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C0005DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0549.02DL

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19037

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/14/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 20.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	13.83	45	DJ
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C0006

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0549.03

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19034

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/14/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.08	4.3	J
02		Unknown-02	9.89	4.3	J
03	000057-10-3	n-Hexadecanoic acid	10.86	6.9	NJ
04	~~000111-06-8~~	~~Hexadecanoic acid, butyl este~~	~~11.69~~	~~29~~	~~NJB~~
05	005776-79-4	1,8-Diazacyclotetradecane-2,9	12.03	5.8	NJ
06		Unknown-03	12.06	3.5	J
07		Unknown-04	12.07	4.7	J
08	000301-02-0	9-Octadecenamide, (Z)-	12.27	6.2	NJ
09	~~000112-84-5~~	~~13-Docosenamide, (Z)-~~	~~13.47~~	~~22~~	~~NJB~~
10	007683-64-9	Squalene	13.54	4.2	NJ
11					
12					
13					
14					
15					
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18					
19					
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21					
22					
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25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

Su 06/29/07

SOM01.1 (5/2005)

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0006DL

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0549.03DL

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19038

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/14/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 10.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	3.15	25	DJ
02	~~000111-06-8~~	~~Hexadecanoic acid, butyl este~~	~~11.69~~	~~37~~	~~DNJB~~
03		Unknown-02	13.45	24	DJ
04		Unknown-03	13.84	26	DJ
05					
06					
07					
08					
09					
10					
11					
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28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

SU 06/29/07.

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0027

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0547.04

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19030

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) N pH: 7.4 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.08	2.7	J
02		Unknown-02	6.28	2.5	J
03	000096-76-4	Phenol, 2,4-bis(1,1-dimethyle	7.66	3.4	NJ
04	000301-02-0	9-Octadecenamide, (Z)-	13.47	5.0	NJ
05					
06					
07					
08					
09					
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11					
12					
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14					
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30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C0028

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0001

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: S-0547.05

Sample wt/vol: 1000 (g/mL) ML Lab File ID: F19036

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/15/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.09	2.5	J
02		Unknown-02	6.28	2.4	J
03		Unknown-03	7.66	2.0	J
04	~~000111-06-8~~	~~Hexadecanoic acid, butyl este~~	~~11.69~~	~~2.2~~	~~NJB~~
05	000301-02-0	9-Octadecenamide, (Z)-	12.27	2.8	NJ
06	~~000112-84-5~~	~~13-Docosenamide, (Z)-~~	~~13.46~~	~~4.5~~	~~NJB~~
07		Unknown-04	15.09	2.3	J
08					
09					
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	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

Su 06/29/07.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0007

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.01

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18937

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 19 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/16/2007

GPC Cleanup: (Y/N) Y pH: 6.7 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.54	290	J
02	000112-84-5	13-Docosenamide, (Z)-	23.05	320	NJ
03		Unknown-02	24.19	280	J
04	000193-39-5	Indeno[1,2,3-cd]pyrene	24.86	330	NJ
05		Unknown-03	26.33	350	J
06					
07					
08					
09					
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	E966796[2]	Total Alkanes	N/A	260	J

[2] EPA-designated Registry Number.

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C0008

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.02

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18938

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 21 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/16/2007

GPC Cleanup: (Y/N) Y pH: 5.2 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.05	150	J
02	000079-34-5	Ethane, 1,1,2,2-tetrachloro-	5.69	140	NJ
03	000112-84-5	13-Docosenamide, (Z)-	23.05	320	NJ
04	000205-99-2	Benz[e]acephenanthrylene	23.18	180	NJ
05		Unknown-02	23.80	140	J
06		Unknown-03	24.19	130	J
07	003386-33-2	Octadecane, 1-chloro-	24.19	150	NJ
08		Unknown-04	24.98	160	J
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
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30					
	E966796[2]	Total Alkanes	N/A	190	J

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0009

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.03

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18939

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 21 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/16/2007

GPC Cleanup: (Y/N) Y pH: 5.0 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	000205-99-2	Benz[e]acephenanthrylene	23.18	240	NJ
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
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30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

C0010

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.04

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19047

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 21 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) Y pH: 4.5 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	13.06	270	J
02		Unknown-02	13.47	330	J
03					
04					
05					
06					
07					
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11					
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28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0011

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0548.01

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19096

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 20 Decanted: (Y/N) N Date Received: 06/14/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/25/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/26/2007

GPC Cleanup: (Y/N) Y pH: 6.2 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	000057-10-3	n-Hexadecanoic acid	10.82	130	NJ
02	000111-06-8	Hexadecanoic acid, butyl este	11.65	93	NJ
03		Unknown-01	12.23	170	J
04		Unknown-02	12.74	84	J
05		Unknown-03	13.44	270	J
06	007683-64-9	Squalene	13.52	280	NJ
07					
08					
09					
10					
11					
12					
13					
14					
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16					
17					
18					
19					
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21					
22					
23					
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25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0012

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.05

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19048

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 20 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) Y pH: 5.3 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	13.24	990	J
02	000112-84-5	13-Docosenamide, (Z)-	13.48	530	NJ
03		Unknown-02	13.58	390	J
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
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27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0013

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.06

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19042

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 11 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	10.93	220	J
02		Unknown-02	11.00	230	J
03		Unknown-03	11.10	220	J
04		Unknown-04	11.23	300	J
05		Unknown-05	11.28	290	J
06		Unknown-06	14.03	230	J
07					
08					
09					
10					
11					
12					
13					
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27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	570	J

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0014

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.07

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19043

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 16 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	000464-49-3	Bicyclo[2.2.1]heptan-2-one, 1	3.95	470	NJ
02		Unknown-01	3.97	250	J
03		Unknown-02	10.64	240	J
04		Unknown-03	10.69	400	J
05		Unknown-04	10.83	350	J
06	000544-63-8	Tetradecanoic acid	10.86	560	NJ
07		Unknown-05	11.99	300	J
08		Unknown-06	14.31	300	J
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	700	J

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0015

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.08

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18953

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 20 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/18/2007

GPC Cleanup: (Y/N) Y pH: 7.1 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	005989-27-5	D-Limonene	8.02	6100	NJ
02		Unknown-01	19.72	1300	J
03		Unknown-02	20.94	2600	J
04		Unknown-03	20.95	1400	J
05		Unknown-04	20.97	1700	J
06		Unknown-05	21.09	1200	J
07		Unknown-06	21.18	2400	J
08		Unknown-07	21.23	1700	J
09		Unknown-08	22.23	1200	J
10		Unknown-09	22.36	1300	J
11					
12					
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29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0015RE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.08RE

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18995

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 20 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/21/2007

GPC Cleanup: (Y/N) Y pH: 7.1 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	000138-86-3	Limonene	2.72	5000	NJ
02		Unknown-01	11.94	3000	J
03		Unknown-02	11.95	5100	J
04		Unknown-03	11.97	3400	J
05		Unknown-04	12.00	3500	J
06		Unknown-05	12.12	5400	J
07		Unknown-06	12.16	3600	J
08		Unknown-07	12.83	2500	J
09		Unknown-08	12.86	2600	J
10		Unknown-09	12.97	2900	J
11					
12					
13					
14					
15					
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	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0016

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.09

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18954

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 14 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/18/2007

GPC Cleanup: (Y/N) Y pH: 7.7 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.51	1200	J
02		Unknown-02	3.15	880	J
03		Unknown-03	19.15	270	J
04		Unknown-04	19.99	290	J
05		Unknown-05	22.72	310	J
06					
07					
08					
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29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0017

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.10

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18955

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 24 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/18/2007

GPC Cleanup: (Y/N) Y pH: 7.7 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	2.51	860	J
02		Unknown-02	3.14	650	J
03		Unknown-03	3.42	840	J
04		Unknown-04	19.21	1100	J
05	051218-45-2	Metolachlor	19.51	7200	NJ
06		Unknown-05	19.81	1200	J
07		Unknown-06	19.96	2800	J
08	000206-44-0	Fluoranthene	20.10	1700	NJ
09		Unknown-07	21.56	520	J
10		Unknown-08	22.81	430	J
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0017RE

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.10RE

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18996

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 24 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/21/2007

GPC Cleanup: (Y/N) Y pH: 7.7 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	10.70	1400	J
02	051218-45-2	Metolachlor	10.93	6800	NJ
03		Unknown-02	11.07	440	J
04		Unknown-03	11.14	1700	J
05		Unknown-04	11.25	1100	J
06		Unknown-05	11.25	1500	J
07	000078-51-3	Ethanol, 2-butoxy-, phosphate	12.40	490	NJ
08		Unknown-06	13.30	710	J
09		Unknown-07	14.01	920	J
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0018

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0548.02

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19097

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 48 Decanted: (Y/N) N Date Received: 06/14/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/25/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/26/2007

GPC Cleanup: (Y/N) Y pH: 6.3 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	10.64	1200	J
02		Unknown-02	10.75	1600	J
03		Unknown-03	10.79	2200	J
04	000438-23-3	Androstane, (5.beta.)-	10.96	1700	NJ
05		Unknown-04	11.19	2000	J
06		Unknown-05	11.20	1200	J
07		Unknown-06	11.35	1200	J
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2] EPA-designated Registry Number.

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0019

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.11

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18956

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 45 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/18/2007

GPC Cleanup: (Y/N) Y pH: 7.4 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	22.11	490	J
02	000112-84-5	13-Docosenamide, (Z)-	23.05	1000	NJ
03		Unknown-02	23.15	520	J
04		Unknown-03	25.60	680	J
05		Unknown-04	25.60	690	J
06		Unknown-05	27.82	560	J
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	3100	J

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0020

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.12

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18957

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 37 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/18/2007

GPC Cleanup: (Y/N) Y pH: 7.1 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	17.57	810	J
02		Unknown-02	17.66	1300	J
03		Unknown-03	17.73	1600	J
04		Unknown-04	17.81	1000	J
05		Unknown-05	17.90	890	J
06		Unknown-06	18.06	1600	J
07		Unknown-07	18.12	1100	J
08	~~000057-10-3~~	~~n-Hexadecanoic acid~~	~~19.49~~	~~1400~~	~~NJB~~
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	2100	J

[2] EPA-designated Registry Number.

Su 06/29/07.

SOM01.1 (5/2005)

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0021

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.13

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F18958

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 47 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/18/2007

GPC Cleanup: (Y/N) Y pH: 5.6 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	12.48	3300	J
02		Unknown-02	12.67	4300	J
03		Unknown-03	12.70	6300	J
04		Unknown-04	13.21	2300	J
05		Unknown-05	17.59	2000	J
06		Unknown-06	17.95	3200	J
07		Unknown-07	18.00	2800	J
08		Unknown-08	18.03	3000	J
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	6800	J

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0022

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.14

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19044

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 8.0 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) Y pH: 7.3 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	12.57	300	J
02		Unknown-02	13.24	220	J
03	000112-84-5	13-Docosenamide, (Z)-	13.47	650	NJ
04	000205-99-2	Benz[e]acephenanthrylene	13.61	220	NJ
05		Unknown-03	13.63	270	J
06	000544-77-4	Hexadecane, 1-iodo-	14.40	910	NJ
07	013187-99-0	2-Bromo dodecane	15.26	650	NJ
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	1400	J

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0023

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.15

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19045

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 10 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) Y pH: 7.5 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01		Unknown-01	13.21	380	J
02	000112-84-5	13-Docosenamide, (Z)-	13.48	380	NJ
03	000192-97-2	Benzo[e]pyrene	13.62	580	NJ
04	1000259-58-5	Pentadec-7-ene, 7-bromomethyl	13.80	400	NJ
05		Unknown-02	14.20	1100	J
06		Unknown-03	14.47	630	J
07		Unknown-04	15.46	280	J
08					
09					
10					
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15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	1600	J

[2] EPA-designated Registry Number.

ORIGINAL

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
C0025

Lab Name: KAP TECHNOLOGIES, INC. Contract: EPW05032

Lab Code: KAP Case No.: 36456 Mod. Ref No.: _____ SDG No.: C0007

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: S-0546.16

Sample wt/vol: 30.00 (g/mL) G Lab File ID: F19046

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 14 Decanted: (Y/N) N Date Received: 06/13/2007

Concentrated Extract Volume: 500 (uL) Date Extracted: 06/14/2007

Injection Volume: 1.0 (uL) Date Analyzed: 06/22/2007

GPC Cleanup: (Y/N) Y pH: 8.2 Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	~~000057-10-3~~	~~n-Hexadecanoic acid~~	~~10.87~~	~~270~~	~~NJB~~
02		Unknown-01	10.97	270	J
03		Unknown-02	11.09	260	J
04		Unknown-03	11.10	220	J
05	001576-67-6	Phenanthrene, 3,6-dimethyl-	11.23	280	NJ
06	005737-13-3	Cyclopenta(def)phenanthrenone	11.29	410	NJ
07	000239-35-0	Benzo[b]naphtho[2,1-d]thiophe	12.47	240	NJ
08	025116-58-9	20.Xi.-Lanosta-7,9(11)-diene-	13.24	350	NJ
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A	530	J

[2] EPA-designated Registry Number.

SU 06/29/07.

SOM01.1 (5/2005)

ORIGINAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
ENVIRONMENTAL SCIENCE CENTER
701 MAPES ROAD
FORT MEADE, MARYLAND 20755-5350

DATE : July 10, 2007

SUBJECT: Region III Data QA Review

FROM : Khin-Cho Thaung FF for KCT
Region III ESAT RPO (3EA20)

TO : James Hargett
Regional Project Manager (3HS12)

Attached is the organic data validation report for the Markay Chemicals site (Case # 36456 SDG #MC0027) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2743.

Attachment

cc: Pamela Hayes (WV Dep Triad Engineering)
Lydia Work (Triad Eng.)

TO File #: 0007 TDF#: 0665

ORIGINAL

Lockheed Martin Enterprise Solutions & Services
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone 410-305-3037 Facsimile 410-305-3597

LOCKHEED MARTIN
We never forget who we're working for™

DATE: June 28, 2007

SUBJECT: Inorganic Data Validation (IM1 Level)
Case: 36456
SDG: MC0027
Site: Markay Chemicals

FROM: Mirna Alpizar MA
Inorganic Data Reviewer

Mahboobeh Mecanic MM
Senior Oversight Chemist

TO: Khin-Cho Thaung
ESAT Region 3 Project Officer

OVERVIEW

Case 36456, Sample Delivery Group (SDG) MC0027, consisted of three (3) aqueous samples analyzed for total metals and cyanide (CN^-) by Sentinel, Inc. (SENTIN). The sample set contained two (2) rinsate blanks. Samples were analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995, which includes review of all Forms but excludes the review of raw data. Areas of concern with respect to data usability are listed below.

Data in this case have been impacted by outliers present in the laboratory and rinsate blanks. Details of these outliers are discussed under "Minor Problems" and qualified analytical results for all samples are summarized on the Data Summary Form (DSF).

MINOR PROBLEMS

Continuing calibration (CCB) and/or rinsate (RB) blanks had reported results greater than the Method Detection Limits (MDLs) for the analytes listed below. Positive results for these analytes in affected samples which are less than or equal to five times ($\leq 5X$) the blank concentrations may be biased high and have been qualified "B" on the DSF.

Blank	Affected Analytes
CCB	beryllium (Be)
RB	arsenic (As), sodium (Na)

CCBs had negative results greater than the absolute values of the MDLs for aluminum (Al), mercury (Hg), and zinc (Zn). Positive results in affected samples which are less than two times (<2X) the absolute values of the blank concentrations may be biased low. The "L" qualifier for these outliers has been superseded by "J" on the DSF. Quantitation limits in affected samples may be biased low and have been qualified "UL" on the DSF.

NOTES

Reported results with values greater than the MDL but below Contract Required Quantitation Limit (CRQL) were qualified "J" on the DSF unless superseded by "B".

Sample MC0027 was used to perform QC (matrix spike, laboratory duplicate and serial dilution analyses). According to the Regional Chain-of-Custody, this sample is a rinsate blank.

Sample MC0027 was re-analyzed at a two-fold (2X) dilution for Na in order to bring the concentration of this analyte within the linear range of the instrument. The result for this analyte in this sample was reported from the diluted analysis and annotated with a "+" on the DSF.

Several chemicals used in the analysis of cyanide (CN^-) showed an expiration date of May 2007. Samples for this case were analyzed in June 2007. A clarification on this finding was requested from the laboratory but has not been received as to the date of this report. No data were qualified based on this finding.

Data for Case 36456, SDG MC0027, were reviewed in accordance with EPA Region 3 Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995.

ATTACHMENTS

INFORMATION REGARDING REPORT CONTENT

APPENDIX A	GLOSSARY OF DATA QUALIFIER CODES
APPENDIX B	DATA SUMMARY FORM(S)
APPENDIX C	CHAIN OF CUSTODY RECORD(S)
APPENDIX D	LABORATORY CASE NARRATIVE(S)

DCN: 36456_MC0027.IM1.doc

APPENDIX A

GLOSSARY OF DATA QUALIFIERS

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of analytes):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte Present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

APPENDIX B

DATA SUMMARY FORMS (DSF)

ORIGINAL

DATA SUMMARY FORM: INORGANIC

Case #: 36456 SDG : MC0027 Number of Soil Samples : 0
Site : MARKAY CHEMICALS Number of Water Samples : 3
Lab. : SENTIN

Sample Number :		MC0004		MC0027		MC0028					
Sampling Location :		GW4		SW2		SW3					
Field QC:				Rinsate Blank		Rinsate Blank					
Matrix :		Water		Water		Water					
Units :		ug/L		ug/L		ug/L					
Date Sampled :		6/13/2007		6/12/2007		6/12/2007					
Time Sampled :		09:00		14:30		12:00					
Dilution Factor :		1.0		1.0/2.0		1.0					
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	200	10300		147	J	86.6	J				
ANTIMONY	60										
*ARSENIC	10	17.9	B	13.4		11.6					
BARIUM	200	963									
BERYLLIUM	5	2.8	B								
*CADMIUM	5	2.7	J								
CALCIUM	5000	33700		253	J	279	J				
*CHROMIUM	10	26.1		1.1	J						
COBALT	50	38.2	J								
COPPER	25	20.0	J								
IRON	100	27400		23.2	J						
*LEAD	10	14.3									
MAGNESIUM	5000	37300									
MANGANESE	15	2020		1.3	J						
MERCURY	0.2	0.080	J		UL		UL				
*NICKEL	40	154									
POTASSIUM	5000	7040		467	J	321	J				
SELENIUM	35										
SILVER	10										
SODIUM	5000	42200	B	216000 +		1920	J				
THALLIUM	25										
VANADIUM	60	20.5	J								
ZINC	60	211			UL		UL				
*CYANIDE	10										

CRQL = Contract Required Quantitation Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS
To calculate sample quantitation limits: (CRQL * Dilution Factor) Revised 09/99
+ = Reported from diluted analysis

APPENDIX C

CHAIN-OF-CUSTODY RECORDS

U.S. EPA Region III Analytical Request Form

Revision 10.06

975 5-23-07

36456

WVD054 1166645

Date: 5/23/2007	Site Activity: SIR McCorkle			
Site Name: Markay Chemicals		Street Address: 302 MacCorkle Avenue		
City: St. Albans	State: WV	Latitude: 38°23'39.39"	Longitude: 81°50'38.41	
Program: Superfund	Acct. #: 2007 T03 N302 DD2C A3JF QB00		CERCLIS #: WVD054166645	
Site ID: A3JF	Spill ID:		Operable Unit: 00	
Site Specific QA Plan Submitted: ☐ No ☒ Yes	Title:		Date Approved:	
EPA Project Leader: James Hargett	Phone#: 215-814-3305	Cell Phone #:	E-mail: Hargett.James@epamail.epa.gov	
Request Preparer: Heather Napier	Phone#: 304-755-0721	Cell Phone #: 304-539-6120	E-mail: HNapier@triadeng.com	
Site Leader: Pamela Hayes	Phone#: 304-926-0499	Cell Phone #:	E-mail: PDHayes@wvdep.org	
Contractor: Triad Engineering, Inc.		EPA CO/PO:		
#Samples 16	Matrix: soil	Parameter: TCL BNA, TCL VOC KAP	Method: SOM01.1 ~~26377,78~~	
#Samples 16	Matrix: soil	Parameter: TAL metals, Hg, CN Sanders	Method: ILM05.3 26382 ~~26379,80~~	
#Samples 6	Matrix: water-non potable	Parameter: TCL BNA, TCL VOC KAP	Method: SOM01.1 26379,80	
#Samples 6	Matrix: water-non potable	Parameter: TAL metals, Hg, CN Sanders	Method: ILM05.3 26381	
#Samples	Matrix:	Parameter:	Method:	
#Samples	Matrix:	Parameter:	Method:	
#Samples	Matrix:	Parameter:	Method:	
#Samples	Matrix:	Parameter:	Method:	
#Samples	Matrix:	Parameter:	Method:	
Ship Date From: 6/12/2007	Ship Date To: 6/14/2007	Org. Validation Level M2	Inorg. Validation Level IM1	
Unvalidated Data Requested: ☒ No ☐ Yes If Yes, TAT Needed: ☐ 14days ☐ 7days ☐ 72hrs ☐ 48hrs ☐ 24hrs ☐ Other (Specify)				
Validated Data Package Due: ☐ 42 days ☐ 30 days ☒ 21days ☐ 14 days ☐ Other (Specify) 14/7				
Electronic Data Deliverables Required: ☐ No ☒ Yes (EDDs will be provided in Region 3 EDD Format)				
Special Instructions:				

FORM ARF- 10/06 Revision 1.1

ORIGINAL

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 36456 **R**
DAS No:

Region:	3	Date Shipped:	6/12/2007
Project Code:		Carrier Name:	FedEx
Account Code:	2007 T 03W302DD2C A3JFQB00	Airbill:	862077056438
CERCLIS ID:	WVD05416645	Shipped to:	Sentinel Inc. 116 Washington Street, NE Huntsville AL 35801 (256) 534-9800
Spill ID:			
Site Name/State:	Markay Chemicals/WV		
Project Leader:	Heather A. Napier		
Action:	Other		
Sampling Co:	Triad Engineering, Inc.		

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
Heather Napier	6/12/07 1520		
2			
3			
4			

Sampler Signature:

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	QC Type
MC0019	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3170 (1)	SS7	S: 6/12/2007	9:45	C0019	--
MC0020	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3176 (1)	SS8	S: 6/12/2007	10:10	C0020	--
MC0021	Soil/Sediment/ Shannon L. Cox	L/G	TM/CN (21)	3182 (1)	SS9	S: 6/12/2007	9:30	C0021	--
MC0022	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3188 (1)	SS10	S: 6/12/2007	15:50	C0022	--
MC0023	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3194 (1)	SS11	S: 6/12/2007	15:50	C0023	Field Duplicate of MC0022
MC0025	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3206 (1)	SS13	S: 6/12/2007	10:40	C0025	--
MC0027	Surface Water/ Heather A. Napier	L/G	CN (21), TM (21)	3218 (HNO3), 3229 (NaOH) (2)	SW2 ✓	S: 6/12/2007	14:30	C0027	Rinsate
MC0028	Surface Water/ Heather A. Napier	L/G	CN (21), TM (21)	3224 (HNO3), 3225 (NaOH) (2)	SW3 ✓	S: 6/12/2007	12:00	C0028	Rinsate

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
	MC0013, MC0010	Heather Napier	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

CN = CLP TAL Cyanide, TM = CLP TAL Total Metals, TM/CN = CLP TAL Total Metals and Cyanide

TR Number: 3-575621085-061207-0001

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, 2000 Edmund Halley Dr., Reston, VA. 20191-3400 Phone 703/264-9348 Fax 703/264-9222

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No:	36456	R
DAS No:		

				Chain of Custody Record		Sampler Signature:	
Region:	3	Date Shipped:	6/13/2007	Relinquished By	(Date / Time)	Received By	(Date / Time)
Project Code:		Carrier Name:	FedEx	Heather Napier	6/14/07 0820		
Account Code:	2007 T 03W302DD2C A3JFQB00	Airbill:	882077056508	2			
CERCLIS ID:	WVD05416645	Shipped to:	Sentinel Inc. 116 Washington Street, NE Huntsville AL 35801 (256) 534-9800	3			
Spill ID:				4			
Site Name/State:	Markay Chemicals/WV						
Project Leader:	Heather A. Napier						
Action:	Other						
Sampling Co:	Triad Engineering, Inc.						

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
MC0004	Ground Water/ Shannon L. Cox	L/G	CN (21), TM (21)	351 (HNO3), 354 (NaOH) (2)	GW4	S: 6/13/2007 9:00	C0004	--
MC0011	Subsurface Soil (>12")/ Shannon L. Cox	L/G	TM/CN (21)	3112 (1)	SB5	S: 6/13/2007 10:25	C0011	--
MC0018	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3164 (1)	SS6	S: 6/13/2007 8:45	C0018	--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s): Heather Napier	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

CN = CLP TAL Cyanide, TM = CLP TAL Total Metals, TM/CN = CLP TAL Total Metals and Cyanide

TR Number: 3-575621085-061307-0001

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, 2000 Edmund Halley Dr., Reston, VA. 20191-3400 Phone 703/264-9348 Fax 703/264-9222

Daphne Woods

From: "Schaffer, Keri" <kschaffer@fedcsc.com>
To: "Daphne Wood" <dwoods@sentinellab.com>
Cc: <slizys.dan@epa.gov>; <Harris.Carroll@epamail.epa.gov>; <thaung.khin-cho@epa.gov>; <kwedar.john@epa.gov>
Sent: Wednesday, June 13, 2007 1:45 PM
Subject: Region 03 | Case 36456 | Lab SENTIN | Issue Documentation | FINAL

Daphne,

Summary Start
-Discrepancies with tags, jars, and/or TR/COC -
Issue 1: The TR/COC lists the analysis as TM/CN, however, per scheduling, the analysis should be TM/Hg/CN.
Resolution 1: In accordance with previous direction from Region 3, the laboratory will note the issue in the Case/SDG Narrative, perform the analyses as indicated on the Scheduling Notification Form, and proceed with the analysis of the samples.

- Insufficient/inappropriate designation of laboratory QC -
Issue 2: There are 2 soil samples listed for QC. The laboratory only needs 1 sample for QC. The laboratory will use sample MC0010 and disregard MC0013.
Resolution 2: In accordance with previous direction from Region 3, the laboratory will select on of the designated samples per matrix for laboratory QC. The laboratory will note the issue in the Case/SDG Narrative, notify the SMO coordinator of the sample selected for laboratory QC, and proceed with the analysis of the samples.
Summary End

Please contact me if you have any further questions or problems.

Thank you,

Keri Schaffer
Environmental Coordinator
Computer Sciences Corporation
15000 Conference Center Drive
Chantilly, VA 20151
Phone: 703-818-4346
Email: kschaffer@fedcsc.com

6/13 2:36pm
Conversation between Keri Schaffer, SMO, and Daphne Woods, SENTIN. SMO asked the laboratory which sample they will be disregarding for QC. The laboratory said they will be disregarding sample MC0013 for QC.

From: Berardino, Michelle
Sent: Wednesday, June 13, 2007 2:29 PM
To: Schaffer, Keri
Subject: FW: Case 36456

From: Sample Receipt[SMTP:SAMPLE_RECEIPT@SENTINELLAB.COM]
Sent: Wednesday, June 13, 2007 2:02:43 PM
To: Berardino, Michelle
Subject: Fw: Case 36456
Auto forwarded by a Rule

Hi again,

195

6/13/2007

Here are a couple of more issues for this case:

4. The analysis is listed as TM/CN on the TR/COC, but the schedule lists TM/Hg/CN.

5. There are 2 soil QC samples listed. Assuming no more samples are coming in, then we will only need one QC sample. We will used MC0010.

Please let me know something as soon as possible about these issues.

Thanks,
Daphne
----- Original Message -----
From: Sample Receipt
To: Michelle Berardino
Sent: Wednesday, June 13, 2007 11:12 AM
Subject: Case 36456

Hi Michelle,

Here are a few issues for Case 36456:

1. The schedule lists the TAT as 14-day, but the TR/COC has 21-day.

2. We received 16 soil samples and 2 water samples. We are scheduled for 16 soils and 6 water samples. The shipment is marked as not complete on the TR/COC. Do you know if we have received all the soil samples for this Case since we received all 16 that we were scheduled for? I just don't want to release them and some more show up tomorrow or something.

3. There are 3 sample containers for sample MC0013. The tag attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. We received containers with tag numbers 3132 and 3133, but no 3134.

Thanks so much,
Daphne

1910

6/13/2007

Daphne Woods

From: "Schaffer, Keri" <kschaffer@fedcsc.com>
To: "Daphne Woods" <dwoods@sentinellab.com>
Sent: Thursday, June 14, 2007 12:30 PM
Subject: Region 03 | Case 36456 | Lab SENTIN | Issue Multiple | FINAL

Daphne,

Summary Start
-Discrepancies with tags, jars, and/or TR/COC- Issue 1: The TR/COC lists a TAT of 21 days, however per scheduling the TAT should be 14 days.
Resolution 1: In accordance with previous direction from Region 3, the laboratory will proceed with the turnaround time indicated on the Scheduling Notification form, note the issue in the SDG Narrative, and proceed with the analysis of the samples.

-Laboratory Problems-
Issue 2: The laboratory has relieved 16 soil samples and 2 water samples. They are scheduled for 16 soils and 6 waters, and the TR/COC lists the Case as not complete. The lab would like to know if they will be receiving any more soil samples.
Resolution 2: Per Region 3, the laboratory will be receiving more samples (2 soils and 1 water shipped today, 6/13). The laboratory will please note the issue in the SDG Narrative and proceed with the analysis of the samples. However, the Region thinks that only 15 soils were shipped yesterday, not 16. Can you please confirm?

-Discrepancies with tags, jars, and/or TR/COC- Issue 3: There are 3 sample containers for sample MC0013. The tag attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. The lab received containers with tag numbers 3132 and 3133, but no 3134.
Resolution 3: Per Region 3, sample MC0013 is a QC samples (which is triple volume, 3 containers). The container identified as C0013/tag 3129 for BNA analysis was incorrectly labeled. The correct label should have been MC0013/tag 3134, TM/CN. The laboratory will please note the issue in the Case/SDG narrative and proceed with the analysis of the samples.
Summary End

Please contact me if you have any further questions or problems.

Thank you,

Keri Schaffer
Environmental Coordinator
Computer Sciences Corporation
15000 Conference Center Drive
Chantilly, VA 20151
Phone: 703-818-4346
Email: kschaffer@fedcsc.com

-----Original Message-----
From: Heather Napier [mailto:hnapier@triadeng.com]
Sent: Wednesday, June 13, 2007 2:17 PM
To: Harris.Carroll@epamail.epa.gov; Hargett.James@epamail.epa.gov; PDHayes@wvdep.org
Cc: Schaffer, Keri; R3_ESC-TSB@epamail.epa.gov
Subject: RE: NEW ISSUE | Case 36456 | Lab SENTIN | Issue Multiple

To All,
I offer the following responses to the issues for case 36456:

Issue 1 -
The schedule lists the TAT as 14-day, but the TR/COC has 21-day.

197

Response
The Scheduling Notification Form requested a 21-day TAT. The TR/COC also indicates a 21 day TAT. However, the Laboratory Assignment Notification that I received indicated 14-day TAT.
The 14 day TAT was not requested.

Issue 2 -
The laboratory has relieved 16 soil samples and 2 water samples. They are scheduled for 16 soils and 6 waters, and the TR/COC lists the Case as not complete. The lab would like to know if they will be receiving any more soil samples.

Response
Yes, the lab will be receiving more samples - they were shipped today. There are 2 soils and 1 water in that shipment. That will be the final shipment.
However, I do believe that only 15 soils were shipped yesterday (not 16). Please confirm.

Issue 3 -
There are 3 sample containers for sample MC0013.
The tag attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. The lab received containers with tag numbers 3132 and 3133, but no 3134.

Response
Sample MC0013 is a laboratory QC sample (which is triple volume, i.e. 3 containers). The container identified as C0013/tag 3129, BNA analysis was incorrectly labeled. The container should have been labeled MC0013, tag 3134, TM/CN. My apologies for the error.

If you have anymore questions or if you need any additional information Please do not hesitate to contact me.

Thanks,
Heather Napier

-----Original Message-----
From: Harris.Carroll@epamail.epa.gov [mailto:Harris.Carroll@epamail.epa.gov]

Sent: Wednesday, June 13, 2007 1:24 PM
To: Hargett.James@epamail.epa.gov; HNapier@triadeng.com; PDHayes@wvdep.org
Cc: kschaffer@fedcsc.com; R3_ESC-TSB@epamail.epa.gov
Subject: Fw: NEW ISSUE | Case 36456 | Lab SENTIN | Issue Multiple

Dear Jim, Heather and Pam,

Please address the following issues I have received from the assigned laboratory via SMO. Please reply to all with your response as soon as possible.

-Laboratory Problems-
Issue 2: The laboratory has relieved 16 soil samples and 2 water samples. They are scheduled for 16 soils and 6 waters, and the TR/COC lists the Case as not complete. The lab would like to know if they will be receiving any more soil samples.

-Discrepancies with tags, jars, and/or TR/COC-
Issue 3: There are 3 sample containers for sample MC0013.

The tag attached to one of the samples listed the sample as C0013 with

198

BNA analysis and a tag number of 3129. The lab received containers with tag numbers 3132 and 3133, but no 3134.

Keri,

Please have the laboratory document the issues in the CASE SDG/NARRATIVE.

Thank you all,
Carroll

Carroll Harris
NAHE, SEE
RSCC Coordinator, ASQAB
U.S. Environmental Protection Agency
Environmental Science Center
701 Mapes Road
Ft. Meade, MD 20755-5350
(410)305-2625
Fax(410)305-3093
---- Forwarded by Carroll Harris/ESC/R3/USEPA/US on 06/13/2007 01:11 PM

"Schaffer, Keri" <kschaffer@fedcsc.com> 06/13/2007 01:08 PM

To: Carroll Harris/ESC/R3/USEPA/US@EPA, Dan Slizys/ESC/R3/USEPA/US@EPA, Khin-Cho Thaung/ESC/R3/USEPA/US@EPA, John Kwedar/ESC/R3/USEPA/US@EPA

cc: "Berardino, Michelle" <mberardino@fedcsc.com>

Subject: NEW ISSUE | Case 36456 | Lab SENTIN | Issue Multiple

Carroll,

SENTIN is reporting the following issues regarding Case 36456. Issue 1 can be resolved using a standard answer, however please advise on how the Region wishes the lab to proceed for issues 2 and 3.

-Discrepancies with tags, jars, and/or TR/COC-
Issue 1: The TR/COC lists a TAT of 21 days, however per scheduling the TAT should be 14 days.
Resolution 1: In accordance with previous direction from Region 3, the laboratory will proceed with the turnaround time indicated on the Scheduling Notification form, note the issue in the SDG Narrative, and proceed with the analysis of the samples.

-Laboratory Problems-
Issue 2: The laboratory has relieved 16 soil samples and 2 water samples. They are scheduled for 16 soils and 6 waters, and the TR/COC lists the Case as not complete. The lab would like to know if they will be receiving any more soil samples.

-Discrepancies with tags, jars, and/or TR/COC-
Issue 3: There are 3 sample containers for sample MC0013. The tag

199

attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. The lab received containers with tag numbers 3132 and 3133, but no 3134.

Please let me know if you have any more questions or problems.

Thank you,

Keri Schaffer
Environmental Coordinator
Computer Sciences Corporation
15000 Conference Center Drive
Chantilly, VA 20151
Phone: 703-818-4346
Email: kschaffer@fedcsc.com

From: Berardino, Michelle
Sent: Wednesday, June 13, 2007 12:38 PM
To: Schaffer, Keri
Subject: FW: Case 36456

From: Sample Receipt[SMTP:SAMPLE_RECEIPT@SENTINELLAB.COM]
Sent: Wednesday, June 13, 2007 12:12:32 PM
To: Berardino, Michelle
Subject: Case 36456
Auto forwarded by a Rule

Hi Michelle,

Here are a few issues for Case 36456:

1. The schedule lists the TAT as 14-day, but the TR/COC has 21-day.

2. We received 16 soil samples and 2 water samples. We are scheduled for 16 soils and 6 water samples. The shipment is marked as not complete on the TR/COC. Do you know if we have received all the soil samples for this Case since we received all 16 that we were scheduled for? I just don't want to release them and some more show up tomorrow or something.

3. There are 3 sample containers for sample MC0013. The tag attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. We received containers with tag numbers 3132 and 3133, but no 3134.

Thanks so much,
Daphne

200

Daphne Woods

From: "Schaffer, Keri" <kschaffer@fedcsc.com>
To: "Daphne Woods" <dwoods@sentinellab.com>
Cc: <slizys.dan@epa.gov>; <Harris.Carroll@epamail.epa.gov>; <thaung.khin-cho@epa.gov>; <kwedar.john@epa.gov>; "Berardino, Michelle" <mberardino@fedcsc.com>
Sent: Friday, June 15, 2007 10:20 AM
Subject: Region 03 | Case 36456 | Lab SENTIN | Issue Insufficient/inappropriate designation of laboratory QC | FINAL

Daphne,

Summary Start
Issue: There was not a water QC sample listed on the TR/COC. The lab would like to use sample MC0027 as the QC sample for SDG MC0027.
Resolution: In accordance with previous direction from Region 3, the laboratory will select a sample for laboratory QC as long as the sample is not a PE, blank, or rinsate sample. The laboratory will note the issue in the Case/SDG Narrative, notify the SMO coordinator of the sample selected for laboratory QC, and proceed with the analysis of the samples.
Summary End

Please contact me if you have any further questions or problems.

Thank you,

Keri Schaffer
Environmental Coordinator
Computer Sciences Corporation
15000 Conference Center Drive
Chantilly, VA 20151
Phone: 703-818-4346
Email: kschaffer@fedcsc.com

-----Original Message-----
From: Daphne Woods [mailto:dwoods@sentinellab.com]
Sent: Friday, June 15, 2007 10:37 AM
To: Schaffer, Keri
Subject: Re: Region 03 | Case 36456 | Lab SENTIN | Issue Multiple | FINAL

201

6/15/2007

Hi. I have one more issue for this Case. There was not a water QC sample
listed on the TR/COC, so the lab has chosen sample MC0027 as the QC sample
for SDG MC0027.

Thanks,
Daphne

Daphne Woods
Document Control Officer/Chemical Engineer
Sentinel, Inc.
(256) 534-9800 ext. 18

202

6/15/2007

APPENDIX D

LABORATORY CASE NARRATIVE

ORIGINAL

USEPA - CLP

COVER PAGE

Lab Name: Sentinel, Inc. Contract: EPW06059

Lab Code: SENTIN Case No.: 36456 NRAS No.: SDG No.: MC0027

SOW No.: ILM05.4

EPA SAMPLE NO.	Lab Sample ID.
MC0004	31355
MC0027	31351
MC0027D	31351S2
MC0027S	31351MS
MC0028	31352

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	YES	
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	YES	
If yes-were raw data generated before application of background corrections?	(Yes/No)	NO	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: Barclay Clive

Date: 6/21/07 Title: Owner

ORIGINAL

U.S. EPA - CLP

SDG NARRATIVE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: Sentinel, Inc. SOW No.: ILM05.4 Contract: EPW06059

Lab Code: SENTIN Case No.: 31456 NRAS No.: SDG No.: MC0027

SAMPLE RECEIPT: Temperature Blank: PRESENT ✓ ABSENT ____
If a blank is absent, a non-invasive laser measurement is taken using a sample.
Cooler temperature(s) recorded via laser measurement were: 5.0, 4.5, 2.0°C
Refer to Record of Communication (ROC) regarding EPA Sample # discrepancies for samples:

Refer to ROC regarding tag discrepancies for samples:

Refer to ROC regarding sample preservation discrepancies for samples:

Refer to ROC regarding: · TAT discrepancies on TR/COC
· Analysis discrepancies on TR/COC

QC Specified: Yes ____ No ✓ If no, chose: MC0027

ANALYSIS: The following analyte(s) were estimated due to possible matrix interferences:

DOCUMENT CONTROL: The following invalid defects resulted due to CCS program anomalies:
Initial Assessment:
Full Assessment:

OTHER: 1. ICP-MS Mean Values in the raw data are incorrect due to TJA software anomalies.
2. Internal Standard calculations in the raw data are reported as the reciprocal values of the %RI (decimal form-not a percentage) with the control limits as stated in the SOW Exhibit D (ICP-MS) Section 12.11.1.

Signature:

Name & Title: BRILIGWE QMOR Date: 6/21/07

2

ORIGINAL

U.S. EPA - CLP

SDG NARRATIVE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: Sentinel, Inc. SOW No.: ILM05.4 Contract: EPW06059

Lab Code: SENTIN Case No.: 36456 NRAS No.: SDG No.: MC0027

EQUATIONS:

HW1 Method: Concentration (µg/L) = C x (V_f/V_i) x DF

WHERE, C = Instrument value in µg/L
V_f = Final digestion volume (mL)
V_i = Initial digestion volume (mL)
DF = Dilution Factor

HS1 Method: Concentration (dry wt.) (mg/kg) = ((C x V)/(W x S)) X DF

WHERE, C = Concentration (mg/L)
V = Final sample volume in Liters (L)
W = Wet sample weight (kg)
S = % Solids/100
DF = Dilution Factor

CW1 Method: Concentration (µg/L) = C x (V_f/V_i) x DF

WHERE, C = Instrument value in µg/L (The average of all replicate integrations).
V_f = Final digestion volume (mL)
V_i = Initial digestion volume (mL)
DF = Dilution Factor

CS1 Method: Concentration (mg/kg) = (A x D x F)/ (B x E)

WHERE, A = Concentration in µg/L
B = Weight in g
D = Dilution Factor
E = % Solids/100
F = Final Volume (0.100 L)

Signature: _____

Name & Title: Brian Lowe QA Officer Date: 6/21/07

ORIGINAL

U.S. EPA - CLP

SDG NARRATIVE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: Sentinel, Inc. SOW No.: ILM05.4 Contract: EPW06059

Lab Code: SENTIN Case No.: 36456 NRAS No.: SDG No.: MC0027

EQUATIONS:

DW2 Method: CN Concentration (µg/L) = (A x D x F)/ B

WHERE, A = µg/L CN of sample from regression analysis
B = volume of original sample for distillation (0.050 L)
D = any dilution factor necessary to bracket sample values within standard values
F = sample receiving solution volume (0.050 L)

DS2 Method: CN Concentration (mg/kg) = (A x D x F)/ (B x E)

WHERE, A = µg/L CN of sample from regression analysis
B = wet weight of original sample (g)
D = any dilution factor necessary to bracket sample values within standard values
E = % solids/100
F = sample receiving solution volume (0.050 L)

HW2 Method: Concentration (µg/L) = C x (V_f/V_i) x (V_f/20) x DF

WHERE, C_i = Instrument value in µg/L (The average of all replicate integrations).
V_f = Final digestion volume (50 mL)
V_i = Initial digestion volume (100 mL)
DF = Dilution Factor

HW3 Method: Concentration (µg/L) = C x (V_f/V_i) x DF

WHERE, C = Instrument value in µg/L (The average of all replicate integrations).
V_f = Final digestion volume (mL)
V_i = Initial digestion volume (mL)
DF = Dilution Factor

Signature: _____

Name & Title: Barbara Cuve Chem Date: 6/21/07

Appendix2,

Inorganic Data Validation Report

ORIGINAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Environmental Sciences Center
701 Mapes Road
Fort Meade, Maryland 20755-5350

DATE : June 29, 2007

SUBJECT: Region III Data QA Review

FROM : Khin-Cho Thaung KCT
Region III ESAT RPO (3EA21)

TO : James Hargett
Regional Project Manager (3HS12)

Attached is the ~~organic~~ inorganic data validation report for the Markey Chemicals Site (Case #: 36456; SDG#: MC0007) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2743.

Attachments

cc: Pamela Hayes (WVDEP)
Lydia Work (Triad Eng.)

TO File #: 0007 TDF#: 0649

Lockheed Martin Enterprise Solutions & Services
ESAT Region 3
US EPA Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Telephone 410-305-3037 Facsimile 410-305-3597

LOCKHEED MARTIN
We never forget who we're working for™

DATE: June 27, 2007

SUBJECT: Inorganic Data Validation (IM1 Level)
Case: 36456
SDG: MC0007
Site: Markay Chemicals

FROM: Mirna Alpizar
Inorganic Data Reviewer

Mahboobeh Mecanic
Senior Oversight Chemist

TO: Khin-Cho Thaung
ESAT Region 3 Project Officer

OVERVIEW

Case 36456, Sample Delivery Group (SDG) MC0007, consisted of eighteen (18) soil samples analyzed for total metals and cyanide (CN^-) by Sentinel, Inc. (SENTIN). The sample set contained two (2) field duplicate pairs. Samples were analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through Routine Analytical Services (RAS) program.

SUMMARY

Data were validated according to EPA Region III Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995, which includes review of all Forms but excludes the review of raw data. Areas of concern with respect to data usability are listed below.

The rinsate blanks associated with these samples were analyzed in SDG MC0027. Results for these field blanks were used to assess field contamination in this sample set. Rinsate blanks results are included in Appendix C.

Data in this case have been impacted by outliers present in the rinsate blank as well as the matrix spike and ICP serial dilution analyses. Details of these outliers are discussed under "Major and Minor Problems" and qualified analytical results for all samples are summarized on the Data Summary Forms (DSFs).

MAJOR PROBLEM

The matrix spike recovery was extremely low (<30%) for antimony (Sb). Low recoveries may be attributed to matrix interferences or analyte lost during the digestion process. Positive results for this analyte in affected samples may be biased extremely low. The "L" qualifier for this outlier has been superseded by "J" on the DSFs. Quantitation limits for this analyte in all samples have been rejected and qualified "R" on the DSFs.

MINOR PROBLEMS

Rinsate blank MC0027, analyzed in a SDG MC0027, had reported results greater than the Method Detection Limits (MDLs) for arsenic (As) and sodium (Na). Positive results for these analytes in affected samples which are less than or equal to five times (≤ 5X) the blank concentrations may be biased high and have been qualified "B" on the DSF.

ICP serial dilution percent differences (%Ds) were outside the control limits (>10%) for aluminum (Al), barium (Ba), chromium (Cr), iron (Fe), magnesium (Mg), manganese (Mn), nickel (Ni), potassium (K), vanadium (V), and zinc (Zn). Positive results for these analytes in all samples are estimated and have been qualified "J" on the DSFs.

The matrix spike recovery was high (>125%) for Mn. Positive results for this analyte in all samples may be biased high. The "K" qualifier for this outlier has been superseded by "J" on the DSFs.

NOTES

Reported results with values greater than the MDL but below Contract Required Quantitation Limit (CRQL) were qualified "J" on the DSFs.

Sample MC0015 was re-analyzed at a three-fold (3X) dilution for Ca in order to bring the concentration of this analyte within the linear range of the instrument. The result for this analyte in this sample was reported from the diluted analysis and annotated with a "+" on the DSF.

Sample MC0021 was reported with a percent solid less than fifty percent (<50%). The CRQL is elevated in this sample due to low percent solids.

Reported results for field duplicate pair MC0008/MC0012 were within 35% RPD, ±2XCRQL for all analytes except calcium (Ca). Reported results for field duplicate pair MC0022/MC0023 were within 35% RPD, ±2XCRQL for all analytes.

Data for Case 36456, SDG MC0007, were reviewed in accordance with EPA Region 3 Innovative Approaches (Level IM1) for Validation of Inorganic Data, June 1995.

ATTACHMENTS

INFORMATION REGARDING REPORT CONTENT

APPENDIX A	GLOSSARY OF DATA QUALIFIER CODES
APPENDIX B	DATA SUMMARY FORM(S)
APPENDIX C	CHAIN OF CUSTODY RECORD(S)
APPENDIX D	LABORATORY CASE NARRATIVE(S)

DCN: 36456_MC0007.IM1.doc

APPENDIX A

GLOSSARY OF DATA QUALIFIERS

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of analytes):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte Present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

APPENDIX B

DATA SUMMARY FORMS (DSF)

ORIGINAL

DATA SUMMARY FORM: INORGANIC

Case #: 36456 | SDG : MC0007 | Number of Soil Samples : 18
Site : | MARKAY CHEMICALS | Number of Water Samples : 0
Lab. : | SENTIN

Sample Number :		MC0007		MC0008		MC0009		MC0010		MC0011	
Sampling Location :		SB1		SB2		SB3		SB4		SB5	
Field QC:				F. Dup MC0012							
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/12/2007		6/13/2007	
Time Sampled :		11:15		10:00		13:20		15:40		10:25	
%Solids :		79.3		78.6		79.0		78.9		77.0	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	20	7550	J	7000	J	6410	J	8690	J	8140	J
ANTIMONY	6		R	1.1	J	1.1	J	1.2	J	1.1	J
ARSENIC	1	5.1	B	4.0	B	5.6	B	6.1	B	5.8	B
BARIUM	20	83.1	J	69.8	J	64.7	J	105	J	85.6	J
BERYLLIUM	0.5	1.0		0.88		1.0		1.1		0.98	
CADMIUM	0.5							0.22	J		
CALCIUM	500	379	J	1910		314	J	512	J	703	
CHROMIUM	1	11.3	J	11.0	J	12.1	J	14.4	J	11.6	J
COBALT	5	9.6		10.3		10.9		10.3		13.1	
COPPER	2.5	18.7		18.7		18.4		19.2		18.2	
IRON	10	25800	J	20900	J	25300	J	27300	J	26100	J
*LEAD	1	11.3		10.5		12.0		10.8		13.1	
MAGNESIUM	500	2360	J	2450	J	1900	J	2420	J	2510	J
MANGANESE	1.5	176	J	215	J	443	J	506	J	647	J
MERCURY	0.1	0.069	J	0.070	J			0.019	J	0.019	J
NICKEL	4	15.9	J	15.0	J	14.9	J	16.7	J	17.2	J
POTASSIUM	500	831	J	840	J	787	J	996	J	860	J
SELENIUM	3.5	1.1	J			1.1	J				
SILVER	1	1.3		1.0	J	1.2	J	1.4		1.3	
SODIUM	500	437	B	408	B	425	B	473	B	482	B
THALLIUM	2.5	2.4	J	1.5	J	2.0	J	2.5	J	2.2	J
VANADIUM	5	16.9	J	15.3	J	16.1	J	18.2	J	17.1	J
ZINC	6	63.4	J	58.9	J	53.1	J	67.6	J	68.3	J
CYANIDE	2.5	5.5								1.9	J

CRQL = Contract Required Quantitation Limit — SEE NARRATIVE FOR CODE DEFINITIONS
To calculate sample quantitation limits: (CRQL * Dilution Factor) / (%Solids/ 100) — Revised 09/99

DATA SUMMARY FORM: INORGANIC

Case #: 36456 SDG : MC0007
Site : MARKAY CHEMICALS
Lab. : SENTIN

Sample Number :		MC0012		MC0013		MC0014		MC0015		MC0016	
Sampling Location :		SB6		SS1		SS2		SS3		SS4	
Field QC:		F. Dup MC0008									
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :		6/12/2007		6/12/2007		6/12/2007		6/12/2007		6/12/2007	
Time Sampled :		10:00		11:30		12:40		13:20		14:00	
%Solids :		78.7		88.1		84.1		72.1		90.6	
Dilution Factor :		1.0		1.0		1.0		1.0/3.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	20	7780	J	7960	J	8180	J	9170	J	9470	J
ANTIMONY	6		R	2.2	J	2.2	J	1.4	J	1.0	J
ARSENIC	1	5.7	B	13.4		19.5		4.0	B	7.7	
BARIUM	20	77.0	J	133	J	153	J	115	J	172	J
BERYLLIUM	0.5	1.0		0.86		0.88		0.35	J	1.3	
CADMIUM	0.5			2.6		3.5		5.1		1.4	
CALCIUM	500	5510		59600		10800		248000 +		41400	
CHROMIUM	1	12.3	J	342	J	89.4	J	295	J	265	J
COBALT	5	9.4		11.2		14.5		3.3	J	8.8	
COPPER	2.5	21.2		58.3		39.3		22.7		47.3	
IRON	10	25900	J	46400	J	36800	J	18700	J	25600	J
*LEAD	1	11.7		397		489		84.8		440	
MAGNESIUM	500	3000	J	37000	J	4810	J	16300	J	10400	J
MANGANESE	1.5	192	J	673	J	643	J	243	J	758	J
MERCURY	0.1	0.032	J	0.27		0.16		0.15		0.15	
NICKEL	4	14.5	J	25.9	J	29.9	J	8.7	J	19.4	J
POTASSIUM	500	845	J	1070	J	1400	J	828	J	961	J
SELENIUM	3.5					1.2	J				
SILVER	1	1.2	J	4.2		2.6		9.5		1.5	
SODIUM	500	454	B	2360	B	1660	B	664	B	1790	B
THALLIUM	2.5	2.1	J	2.3	J	3.0				1.6	J
VANADIUM	5	17.2	J	20.3	J	21.6	J	8.2	J	14.4	J
ZINC	6	60.8	J	912	J	666	J	189	J	704	J
CYANIDE	2.5					0.27	J	0.26	J	0.55	J

CRQL = Contract Required Quantitation Limit SEE NARRATIVE FOR CODE DEFINITIONS
To calculate sample quantitation limits: (CRQL * Dilution Factor) / (%Solids/ 100) Revised 09/99
+ = Reported from diluted analysis

DATA SUMMARY FORM: INORGANIC

Case #: 36456 SDG : MC0007
Site : MARKAY CHEMICALS
Lab. : SENTIN

Sample Number :		MC0017		MC0018		MC0019		MC0020		MC0021	
Sampling Location :		SS5		SS6		SS7		SS8		SS9	
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :		6/12/2007		6/13/2007		6/12/2007		6/12/2007		6/12/2007	
Time Sampled :		15:00		08:45		09:45		10:10		09:30	
%Solids :		81.7		63.7		61.9		68.4		48.7	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	20	8990	J	7800	J	6670	J	9190	J	4580	J
ANTIMONY	6	1.2	J	2.6	J		R	2.8	J	2.2	J
ARSENIC	1	5.4	B	10.6		23.6		10.5		8.2	B
BARIUM	20	241	J	343	J	82.1	J	141	J	239	J
BERYLLIUM	0.5	1.0		1.0		1.2		0.93		0.38	J
CADMIUM	0.6	1.7		13.5		0.31	J	1.5		0.87	J
CALCIUM	500	44500		32300		26100		22900		8010	
CHROMIUM	1	446	J	1970	J	59.7	J	39.7	J	242	J
COBALT	5	6.2		8.9		7.2	J	11.6		3.8	J
COPPER	2.5	54.7		1720		15.9		109		135	
IRON	10	25700	J	52800	J	11800	J	51800	J	20900	J
*LEAD	1	374		967		30.4		97.6		94.9	
MAGNESIUM	500	9570	J	6090	J	3160	J	6590	J	1120	J
MANGANESE	1.5	756	J	833	J	282	J	425	J	162	J
MERCURY	0.1	0.16		0.34		0.11	J	0.18		0.32	
NICKEL	4	19.8	J	24.5	J	14.8	J	31.0	J	9.7	J
POTASSIUM	500	1140	J	1100	J	1530	J	1560	J	2460	J
SELENIUM	3.5			2.8	J			1.8	J	2.5	J
SILVER	1	18.1		4.4				2.9		1.5	J
SODIUM	500	1240	B	6360	B	527	B	1340	B	804	B
THALLIUM	2.5			3.9	J			4.4			
VANADIUM	5	10.2	J	16.7	J	13.1	J	18.1	J	17.3	J
ZINC	6	389	J	2780	J	69.3	J	366	J	152	J
CYANIDE	2.5	0.44	J	1.0	J	0.53	J	0.32	J	0.43	J

CRQL = Contract Required Quantitation Limit — SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) / (%Solids/ 100) — Revised 09/99

ORIGINAL

DATA SUMMARY FORM: INORGANIC

Case #: 36456 SDG : MC0007
Site : MARKAY CHEMICALS
Lab. : SENTIN

Sample Number :		MC0022		MC0023		MC0025					
Sampling Location :		SS10		SS11		SS13					
Field QC:		F. Dup MC0023		F. Dup MC0022							
Matrix :		Soil		Soil		Soil					
Units :		mg/Kg		mg/Kg		mg/Kg					
Date Sampled :		6/12/2007		6/12/2007		6/12/2007					
Time Sampled :		15:50		15:50		10:40					
%Solids :		90.5		89.2		84.5					
Dilution Factor :		1.0		1.0		1.0					
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	20	10800	J	9860	J	5910	J				
ANTIMONY	6	1.1	J		R	1.2	J				
ARSENIC	1	7.6		10.5		7.7	B				
BARIUM	20	153	J	122	J	142	J				
BERYLLIUM	0.5	1.3		1.2		0.74					
CADMIUM	0.5	0.74		0.64		1.4					
CALCIUM	500	30100		30400		65200					
CHROMIUM	1	29.8	J	27.8	J	24.3	J				
COBALT	5	11.2		11.9		6.8					
COPPER	2.5	37.6		32.9		51.8					
IRON	10	19700	J	19700	J	16800	J				
*LEAD	1	26.9		28.0		394					
MAGNESIUM	500	6150	J	4320	J	11700	J				
MANGANESE	1.5	466	J	602	J	512	J				
MERCURY	0.1			0.050	J	0.071	J				
NICKEL	4	27.2	J	27.8	J	15.4	J				
POTASSIUM	500	2330	J	2310	J	872	J				
SELENIUM	3.5										
SILVER	1	0.75	J	0.79	J	0.90	J				
SODIUM	500	565	B	491	B	1740	B				
THALLIUM	2.5	1.2	J	1.3	J						
VANADIUM	5	19.3	J	18.5	J	13.7	J				
ZINC	6	130	J	113	J	276	J				
CYANIDE	2.5	0.42	J	0.53	J	0.27	J				

CRQL = Contract Required Quantitation Limit
To calculate sample quantitation limits: (CRQL * Dilution Factor) / (%Solids/ 100)

SEE NARRATIVE FOR CODE DEFINITIONS
Revised 09/99

APPENDIX C

CHAIN-OF-CUSTODY RECORDS

9TS 5-23-07

U.S. EPA Region III Analytical Request Form

Revision 10.06

36456

WVD054 1166645

Date: 5/23/2007	Site Activity: SIR McCorkle		
Site Name: Markay Chemicals	Street Address: 302 MacCorkle Avenue		
City: St. Albans	State: WV	Latitude: 38°23'39.39"	Longitude: 81°50'38.41
Program: Superfund	Acct. #: 2007 T03 N302 DD2C A3JF QB00	CERCLIS #: WVD054166645	
Site ID: A3JF	Spill ID:	Operable Unit: 00	
Site Specific QA Plan Submitted: ☐ No ☒ Yes	Title:	Date Approved:	
EPA Project Leader: James Hargett	Phone#: 215-814-3305	Cell Phone #:	E-mail: Hargett.James@epamail.epa.gov
Request Preparer: Heather Napier	Phone#: 304-755-0721	Cell Phone #: 304-539-6120	E-mail: HNapier@triadeng.com
Site Leader: Pamela Hayes	Phone#: 304-926-0499	Cell Phone #:	E-mail: PDHayes@wvdep.org

Contractor: Triad Engineering, Inc.		EPA CO/PO:	
#Samples 16	Matrix: soil	Parameter: TCL BNA, TCL VOC KAP	Method: SOM01.1 ~~26377,78~~
#Samples 16	Matrix: soil	Parameter: TAL metals, Hg, CN Sentin	Method: ILM05.3 26382 ~~26379,80~~
#Samples 6	Matrix: water-non potable	Parameter: TCL BNA, TCL VOC KAP	Method: SOM01.1 26379,80
#Samples 6	Matrix: water-non potable	Parameter: TAL metals, Hg, CN Sentin	Method: ILM05.3 26381
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:
#Samples	Matrix:	Parameter:	Method:

Ship Date From: 6/12/2007	Ship Date To: 6/14/2007	Org. Validation Level M2	Inorg. Validation Level IM1

Unvalidated Data Requested: ☒ No ☐ Yes If Yes, TAT Needed: ☐ 14days ☐ 7days ☐ 72hrs ☐ 48hrs ☐ 24hrs ☐ Other (Specify)

Validated Data Package Due: ☐ 42 days ☐ 30 days ☒ 21days ☐ 14 days ☐ Other (Specify) 14/7

Electronic Data Deliverables Required: ☐ No ☒ Yes (EDDs will be provided in Region 3 EDD Format)

Special Instructions:

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 36456 **R**
DAS No:

Region:	3	**Date Shipped:**	6/12/2007	**Chain of Custody Record**	**Sampler Signature:**
Project Code:		**Carrier Name:**	FedEx	**Relinquished By (Date / Time)**	**Received By (Date / Time)**
Account Code:	2007 T 03W302DD2C A3JFQB00	**Airbill:**	882077056438	Heather Napier 6-14-07 9:20	
CERCLIS ID:	WVD05416645	**Shipped to:**	Sentinel Inc. 116 Washington Street, NE Huntsville AL 35801 (256) 534-9800	2	
Spill ID:				3	
Site Name/State:	Markay Chemicals/WV			4	
Project Leader:	Heather A. Napier				
Action:	Other				
Sampling Co:	Triad Engineering, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	QC Type
MC0007	Subsurface Soil (>12")/ Shannon L. Cox	L/G	TM/CN (21)	378 (1)	SB1	S: 6/12/2007	11:15	C0007	--
MC0008	Subsurface Soil (>12")/ Shannon L. Cox	L/G	TM/CN (21)	384 (1)	SB2	S: 6/12/2007	10:00	C0008	--
MC0009	Subsurface Soil (>12")/ Shannon L. Cox	L/G	TM/CN (21)	390 (1)	SB3	S: 6/12/2007	13:20	C0009	--
MC0010	Subsurface Soil (>12")/ Shannon L. Cox	L/G	TM/CN (21)	3104, 3105, 3106 (3)	SB4	S: 6/12/2007	15:40	C0010	--
MC0012	Subsurface Soil (>12")/ Shannon L. Cox	L/G	TM/CN (21)	3116 (1)	SB6	S: 6/12/2007	10:00	C0012	Field Duplicate of MC0008
MC0013	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3132, 3133, 3134 (3)	SS1	S: 6/12/2007	11:30	C0013	--
MC0014	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3140 (1)	SS2	S: 6/12/2007	12:40	C0014	--
MC0015	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3146 (1)	SS3	S: 6/12/2007	13:20	C0015	--
MC0016	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3152 (1)	SS4	S: 6/12/2007	14:00	C0016	--
MC0017	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3158 (1)	SS5	S: 6/12/2007	15:00	C0017	--

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
	MC0013, MC0010	Heather Napier	
Analysis Key:	**Concentration:** L = Low, M = Low/Medium, H = High	**Type/Designate:** Composite = C, Grab = G	**Shipment Iced?** ____

CN = CLP TAL Cyanide, TM = CLP TAL Total Metals, TM/CN = CLP TAL Total Metals and Cyanide

TR Number: 3-575621085-061207-0001

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, 2000 Edmund Halley Dr., Reston, VA. 20191-3400 Phone 703/264-9348 Fax 703/264-9222

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 36456 **R**
DAS No:

Region:	3	**Date Shipped:**	6/12/2007	**Chain of Custody Record**	**Sampler Signature:**
Project Code:		**Carrier Name:**	FedEx	**Relinquished By (Date / Time)**	**Received By (Date / Time)**
Account Code:	2007 T 03W302DD2C A3JFQB00	**Airbill:**	862077056438	Heather Napier 6/12/07	
CERCLIS ID:	WVD05416645	**Shipped to:**	Sentinel Inc. 116 Washington Street, NE Huntsville AL 35801 (256) 534-9800	2	
Spill ID:				3	
Site Name/State:	Markay Chemicals/WV			4	
Project Leader:	Heather A. Napier				
Action:	Other				
Sampling Co:	Triad Engineering, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
MC0019	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3170 (1)	SS7	S: 6/12/2007 9:45	C0019	--
MC0020	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3176 (1)	SS8	S: 6/12/2007 10:10	C0020	--
MC0021	Soil/Sediment/ Shannon L. Cox	L/G	TM/CN (21)	3182 (1)	SS9	S: 6/12/2007 9:30	C0021	--
MC0022	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3188 (1)	SS10	S: 6/12/2007 15:50	C0022	--
MC0023	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3194 (1)	SS11	S: 6/12/2007 15:50	C0023	Field Duplicate of MC0022
MC0025	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3206 (1)	SS13	S: 6/12/2007 10:40	C0025	--
MC0027	Surface Water/ Heather A. Napier	L/G	CN (21), TM (21)	3218 (HNO3), 3229 (NaOH) (2)	SW2	S: 6/12/2007 14:30	C0027	Rinsate
MC0028	Surface Water/ Heather A. Napier	L/G	CN (21), TM (21)	3224 (HNO3), 3225 (NaOH) (2)	SW3	S: 6/12/2007 12:00	C0028	Rinsate

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
	MC0013, MC0010	Heather Napier	
Analysis Key:	**Concentration:** L = Low, M = Low/Medium, H = High	**Type/Designate:** Composite = C, Grab = G	**Shipment Iced?** _____

CN = CLP TAL Cyanide, TM = CLP TAL Total Metals, TM/CN = CLP TAL Total Metals and Cyanide

TR Number: 3-575621085-061207-0001

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, 2000 Edmund Halley Dr., Reston, VA. 20191-3400 Phone 703/264-9348 Fax 703/264-9222

USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 36456 **R**
DAS No:

Region:	3	**Date Shipped:**	6/13/2007	**Chain of Custody Record**	**Sampler Signature:**
Project Code:		**Carrier Name:**	FedEx	**Relinquished By (Date / Time)**	**Received By (Date / Time)**
Account Code:	2007 T 03W302DD2C A3JFQB00	**Airbill:**	862077056508	Heather Napier 6/13/07 820	
CERCLIS ID:	WVD05416645	**Shipped to:**	Sentinel Inc. 116 Washington Street, NE Huntsville AL 35801 (256) 534-9800	2	
Spill ID:				3	
Site Name/State:	Markay Chemicals/WV			4	
Project Leader:	Heather A. Napier				
Action:	Other				
Sampling Co:	Triad Engineering, Inc.				

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	QC Type
MC0004	Ground Water/ Shannon L. Cox	L/G	CN (21), TM (21)	351 (HNO3), 354 (NaOH) (2)	GW4	S: 6/13/2007	9:00	C0004	--
MC0011	Subsurface Soil (>12")/ Shannon L. Cox	L/G	TM/CN (21)	3112 (1)	SB5	S: 6/13/2007	10:25	C0011	--
MC0018	Soil/Sediment/ Jennifer L. Welch	L/G	TM/CN (21)	3164 (1)	SS6	S: 6/13/2007	8:45	C0018	--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
		Heather Napier	

Analysis Key: **Concentration:** L = Low, M = Low/Medium, H = High **Type/Designate:** Composite = C, Grab = G **Shipment Iced?** _____

CN = CLP TAL Cyanide, TM = CLP TAL Total Metals, TM/CN = CLP TAL Total Metals and Cyanide

TR Number: 3-575621085-061307-0001

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, 2000 Edmund Halley Dr., Reston, VA. 20191-3400 Phone 703/264-9348 Fax 703/264-9222

Daphne Woods

From: "Schaffer, Keri" <kschaffer@fedcsc.com>
To: "Daphne Wood" <dwoods@sentinellab.com>
Cc: <slizys.dan@epa.gov>; <Harris.Carroll@epamail.epa.gov>; <thaung.khin-cho@epa.gov>; <kwedar.john@epa.gov>
Sent: Wednesday, June 13, 2007 1:45 PM
Subject: Region 03 | Case 36456 | Lab SENTIN | Issue Documentation | FINAL

Daphne,

Summary Start
-Discrepancies with tags, jars, and/or TR/COC -
Issue 1: The TR/COC lists the analysis as TM/CN, however, per scheduling, the analysis should be TM/Hg/CN.
Resolution 1: In accordance with previous direction from Region 3, the laboratory will note the issue in the Case/SDG Narrative, perform the analyses as indicated on the Scheduling Notification Form, and proceed with the analysis of the samples.

- Insufficient/inappropriate designation of laboratory QC -
Issue 2: There are 2 soil samples listed for QC. The laboratory only needs 1 sample for QC. The laboratory will use sample MC0010 and disregard MC0013.
Resolution 2: In accordance with previous direction from Region 3, the laboratory will select on of the designated samples per matrix for laboratory QC. The laboratory will note the issue in the Case/SDG Narrative, notify the SMO coordinator of the sample selected for laboratory QC, and proceed with the analysis of the samples.
Summary End

Please contact me if you have any further questions or problems.

Thank you,

Keri Schaffer
Environmental Coordinator
Computer Sciences Corporation
15000 Conference Center Drive
Chantilly, VA 20151
Phone: 703-818-4346
Email: kschaffer@fedcsc.com

6/13 2:36pm
Conversation between Keri Schaffer, SMO, and Daphne Woods, SENTIN. SMO asked the laboratory which sample they will be disregarding for QC. The laboratory said they will be disregarding sample MC0013 for QC.

From: Berardino, Michelle
Sent: Wednesday, June 13, 2007 2:29 PM
To: Schaffer, Keri
Subject: FW: Case 36456

From: Sample Receipt[SMTP:SAMPLE_RECEIPT@SENTINELLAB.COM]
Sent: Wednesday, June 13, 2007 2:02:43 PM
To: Berardino, Michelle
Subject: Fw: Case 36456
Auto forwarded by a Rule

Hi again,

257

6/13/2007

Here are a couple of more issues for this case:

4. The analysis is listed as TM/CN on the TR/COC, but the schedule lists TM/Hg/CN.

5. There are 2 soil QC samples listed. Assuming no more samples are coming in, then we will only need one QC sample. We will used MC0010.

Please let me know something as soon as possible about these issues.

Thanks,
Daphne
----- Original Message -----
From: Sample Receipt
To: Michelle Berardino
Sent: Wednesday, June 13, 2007 11:12 AM
Subject: Case 36456

Hi Michelle,

Here are a few issues for Case 36456:

1. The schedule lists the TAT as 14-day, but the TR/COC has 21-day.

2. We received 16 soil samples and 2 water samples. We are scheduled for 16 soils and 6 water samples. The shipment is marked as not complete on the TR/COC. Do you know if we have received all the soil samples for this Case since we received all 16 that we were scheduled for? I just don't want to release them and some more show up tomorrow or something.

3. There are 3 sample containers for sample MC0013. The tag attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. We received containers with tag numbers 3132 and 3133, but no 3134.

Thanks so much,
Daphne

258

Daphne Woods

From: "Schaffer, Keri" <kschaffer@fedcsc.com>
To: "Daphne Woods" <dwoods@sentinellab.com>
Sent: Thursday, June 14, 2007 12:30 PM
Subject: Region 03 | Case 36456 | Lab SENTIN | Issue Multiple | FINAL

Daphne,

Summary Start
-Discrepancies with tags, jars, and/or TR/COC- Issue 1: The TR/COC lists a TAT of 21 days, however per scheduling the TAT should be 14 days.
Resolution 1: In accordance with previous direction from Region 3, the laboratory will proceed with the turnaround time indicated on the Scheduling Notification form, note the issue in the SDG Narrative, and proceed with the analysis of the samples.

-Laboratory Problems-
Issue 2: The laboratory has relieved 16 soil samples and 2 water samples. They are scheduled for 16 soils and 6 waters, and the TR/COC lists the Case as not complete. The lab would like to know if they will be receiving any more soil samples.
Resolution 2: Per Region 3, the laboratory will be receiving more samples (2 soils and 1 water shipped today, 6/13). The laboratory will please note the issue in the SDG Narrative and proceed with the analysis of the samples. However, the Region thinks that only 15 soils were shipped yesterday, not 16. Can you please confirm?

-Discrepancies with tags, jars, and/or TR/COC- Issue 3: There are 3 sample containers for sample MC0013. The tag attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. The lab received containers with tag numbers 3132 and 3133, but no 3134.
Resolution 3: Per Region 3, sample MC0013 is a QC samples (which is triple volume, 3 containers). The container identified as C0013/tag 3129 for BNA analysis was incorrectly labeled. The correct label should have been MC0013/tag 3134, TM/CN. The laboratory will please note the issue in the Case/SDG narrative and proceed with the analysis of the samples.
Summary End

Please contact me if you have any further questions or problems.

Thank you,

Keri Schaffer
Environmental Coordinator
Computer Sciences Corporation
15000 Conference Center Drive
Chantilly, VA 20151
Phone: 703-818-4346
Email: kschaffer@fedcsc.com

-----Original Message-----
From: Heather Napier [mailto:hnapier@triadeng.com]
Sent: Wednesday, June 13, 2007 2:17 PM
To: Harris.Carroll@epamail.epa.gov; Hargett.James@epamail.epa.gov; PDHayes@wvdep.org
Cc: Schaffer, Keri; R3_ESC-TSB@epamail.epa.gov
Subject: RE: NEW ISSUE | Case 36456 | Lab SENTIN | Issue Multiple

To All,
I offer the following responses to the issues for case 36456:

Issue 1 -
The schedule lists the TAT as 14-day, but the TR/COC has 21-day.

259

Response
The Scheduling Notification Form requested a 21-day TAT. The TR/COC also indicates a 21 day TAT. However, the Laboratory Assignment Notification that I received indicated 14-day TAT.
The 14 day TAT was not requested.

Issue 2 -
The laboratory has relieved 16 soil samples and 2 water samples. They are scheduled for 16 soils and 6 waters, and the TR/COC lists the Case as not complete. The lab would like to know if they will be receiving any more soil samples.

Response
Yes, the lab will be receiving more samples - they were shipped today. There are 2 soils and 1 water in that shipment. That will be the final shipment.
However, I do believe that only 15 soils were shipped yesterday (not 16). Please confirm.

Issue 3 -
There are 3 sample containers for sample MC0013.
The tag attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. The lab received containers with tag numbers 3132 and 3133, but no 3134.

Response
Sample MC0013 is a laboratory QC sample (which is triple volume, i.e. 3 containers). The container identified as C0013/tag 3129, BNA analysis was incorrectly labeled. The container should have been labeled MC0013, tag 3134, TM/CN. My apologies for the error.

If you have anymore questions or if you need any additional information Please do not hesitate to contact me.

Thanks,
Heather Napier

-----Original Message-----
From: Harris.Carroll@epamail.epa.gov [mailto:Harris.Carroll@epamail.epa.gov]

Sent: Wednesday, June 13, 2007 1:24 PM
To: Hargett.James@epamail.epa.gov; HNapier@triadeng.com; PDHayes@wvdep.org
Cc: kschaffer@fedcsc.com; R3_ESC-TSB@epamail.epa.gov
Subject: Fw: NEW ISSUE | Case 36456 | Lab SENTIN | Issue Multiple

Dear Jim, Heather and Pam,

Please address the following issues I have received from the assigned laboratory via SMO. Please reply to all with your response as soon as possible.

-Laboratory Problems-
Issue 2: The laboratory has relieved 16 soil samples and 2 water samples. They are scheduled for 16 soils and 6 waters, and the TR/COC lists the Case as not complete. The lab would like to know if they will be receiving any more soil samples.

-Discrepancies with tags, jars, and/or TR/COC-
Issue 3: There are 3 sample containers for sample MC0013.

The tag attached to one of the samples listed the sample as C0013 with

260

BNA analysis and a tag number of 3129. The lab received containers with tag numbers 3132 and 3133, but no 3134.

Keri,

Please have the laboratory document the issues in the CASE SDG/NARRATIVE.

Thank you all,
Carroll

Carroll Harris
NAHE, SEE
RSCC Coordinator, ASQAB
U.S. Environmental Protection Agency
Environmental Science Center
701 Mapes Road
Ft. Meade, MD 20755-5350
(410)305-2625
Fax(410)305-3093
----- Forwarded by Carroll Harris/ESC/R3/USEPA/US on 06/13/2007 01:11 PM -----

"Schaffer, Keri" <kschaffer@fedcsc.com>
06/13/2007 01:08 PM

To: Carroll Harris/ESC/R3/USEPA/US@EPA, Dan Slizys/ESC/R3/USEPA/US@EPA, Khin-Cho Thaung/ESC/R3/USEPA/US@EPA, John Kwedar/ESC/R3/USEPA/US@EPA

cc: "Berardino, Michelle" <mberardino@fedcsc.com>

Subject: NEW ISSUE | Case 36456 | Lab SENTIN | Issue Multiple

Carroll,

SENTIN is reporting the following issues regarding Case 36456. Issue 1 can be resolved using a standard answer, however please advise on how the Region wishes the lab to proceed for issues 2 and 3.

-Discrepancies with tags, jars, and/or TR/COC-
Issue 1: The TR/COC lists a TAT of 21 days, however per scheduling the TAT should be 14 days.
Resolution 1: In accordance with previous direction from Region 3, the laboratory will proceed with the turnaround time indicated on the Scheduling Notification form, note the issue in the SDG Narrative, and proceed with the analysis of the samples.

-Laboratory Problems-
Issue 2: The laboratory has relieved 16 soil samples and 2 water samples. They are scheduled for 16 soils and 6 waters, and the TR/COC lists the Case as not complete. The lab would like to know if they will be receiving any more soil samples.

-Discrepancies with tags, jars, and/or TR/COC-
Issue 3: There are 3 sample containers for sample MC0013. The tag

201

attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. The lab received containers with tag numbers 3132 and 3133, but no 3134.

Please let me know if you have any more questions or problems.

Thank you,

Keri Schaffer
Environmental Coordinator
Computer Sciences Corporation
15000 Conference Center Drive
Chantilly, VA 20151
Phone: 703-818-4346
Email: kschaffer@fedcsc.com

From: Berardino, Michelle
Sent: Wednesday, June 13, 2007 12:38 PM
To: Schaffer, Keri
Subject: FW: Case 36456

From: Sample Receipt[SMTP:SAMPLE_RECEIPT@SENTINELLAB.COM]
Sent: Wednesday, June 13, 2007 12:12:32 PM
To: Berardino, Michelle
Subject: Case 36456
Auto forwarded by a Rule

Hi Michelle,

Here are a few issues for Case 36456:

1. The schedule lists the TAT as 14-day, but the TR/COC has 21-day.

2. We received 16 soil samples and 2 water samples. We are scheduled for 16 soils and 6 water samples. The shipment is marked as not complete on the TR/COC. Do you know if we have received all the soil samples for this Case since we received all 16 that we were scheduled for? I just don't want to release them and some more show up tomorrow or something.

3. There are 3 sample containers for sample MC0013. The tag attached to one of the samples listed the sample as C0013 with BNA analysis and a tag number of 3129. We received containers with tag numbers 3132 and 3133, but no 3134.

Thanks so much,
Daphne

202

ORIGINAL

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MC0027

Lab Name: Sentinel, Inc. Contract: EPW06059

Lab Code: SENTIN Case No.: 36456 NRAS No.: SDG No.: MC0027

Matrix: (soil/water) WATER Lab Sample ID: 31351

Level: (low/med) LOW Date Received: 06/13/2007

% Solids: 0.0

Rinsate Blank

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	147	J		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	13.4			P
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	253	J		P
7440-47-3	Chromium	1.1	J		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	23.2	J		P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese	1.3	J		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	467	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	716000		D	P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	60.0	U		P
57-12-5	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

ORIGINAL

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MC0028

Lab Name: Sentinel, Inc. Contract: EPW06059

Lab Code: SENTIN Case No.: 36456 NRAS No.: SDG No.: MC0027

Matrix: (soil/water) WATER Lab Sample ID: 31352

Level: (low/med) LOW Date Received: 06/13/2007

% Solids: 0.0

Rinsate Blank

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	86.6	J		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	11.6			P
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	279	J		P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	100	U		P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese	15.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	321	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	1920	J		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	60.0	U		P
57-12-5	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

APPENDIX D

LABORATORY CASE NARRATIVE

ORIGINAL

USEPA - CLP

COVER PAGE

Lab Name: Sentinel, Inc. Contract: EPW06059

Lab Code: SENTIN Case No.: 36456 NRAS No.: SDG No.: MC0007

SOW No.: ILM05.4

EPA SAMPLE NO.	Lab Sample ID.
MC0007	31335
MC0008	31336
MC0009	31337
MC0010	31338
MC0010D	31338S2
MC0010S	31338MS
MC0011	31353
MC0012	31339
MC0013	31340
MC0014	31341
MC0015	31342
MC0016	31343
MC0017	31344
MC0018	31354
MC0019	31345
MC0020	31346
MC0021	31347
MC0022	31348
MC0023	31349
MC0025	31350

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	YES	
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	YES	
If yes-were raw data generated before application of background corrections?	(Yes/No)	NO	

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: BARC. IGUR

Date: 9/26/07 Title: OWNER

ORIGINAL

U.S. EPA - CLP

SDG NARRATIVE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: Sentinel, Inc. SOW No.: ILM05.4 Contract: EPW06059

Lab Code: SENTIN Case No.: 36456 NRAS No.: SDG No.: MC0007

SAMPLE RECEIPT: Temperature Blank: PRESENT ✓ ABSENT ____
If a blank is absent, a non-invasive laser measurement is taken using a sample.
Cooler temperature(s) recorded via laser measurement were: 5.0, 4.5, 2.0°C
Refer to Record of Communication (ROC) regarding EPA Sample # discrepancies for samples:

Refer to ROC regarding tag discrepancies for samples: MC0013

Refer to ROC regarding sample preservation discrepancies for samples:

Refer to ROC regarding: · analysis discrepancies on TR/COC
· QC selection
· TAT discrepancies on TR/COC

QC Specified: Yes ✓ No ____ If no, chose: ____

ANALYSIS: The following analyte(s) were estimated due to possible matrix interferences:
Al, Ba, Cr, Fe, Mg, Mn, Ni, K, Y, +Zn

DOCUMENT CONTROL: The following invalid defects resulted due to CCS program anomalies:
Initial Assessment:
Full Assessment:

OTHER: 1. ICP-MS Mean Values in the raw data are incorrect due to TJA software anomalies.
2. Internal Standard calculations in the raw data are reported as the reciprocal values of the %RI (decimal form-not a percentage) with the control limits as stated in the SOW Exhibit D (ICP-MS) Section 12.11.1.

Signature:

Name & Title: Brielle QAO

Date: 6/20/07

ORIGINAL

U.S. EPA - CLP

SDG NARRATIVE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: Sentinel, Inc. SOW No.: ILM05.4 Contract: EPW06059

Lab Code: SENTIN Case No.: 36451a NRAS No.: SDG No.: MC0007

EQUATIONS:

HW1 Method: Concentration (µg/L) = C x (V_f/V_i) x DF

WHERE, C = Instrument value in µg/L
V_f = Final digestion volume (mL)
V_i = Initial digestion volume (mL)
DF = Dilution Factor

HS1 Method: Concentration (dry wt.) (mg/kg) = ((C x V)/(W x S)) X DF

WHERE, C = Concentration (mg/L)
V = Final sample volume in Liters (L)
W = Wet sample weight (kg)
S = % Solids/100
DF = Dilution Factor

CW1 Method: Concentration (µg/L) = C x (V_f/V_i) x DF

WHERE, C = Instrument value in µg/L (The average of all replicate integrations).
V_f = Final digestion volume (mL)
V_i = Initial digestion volume (mL)
DF = Dilution Factor

CS1 Method: Concentration (mg/kg) = (A x D x F)/ (B x E)

WHERE, A = Concentration in µg/L
B = Weight in g
D = Dilution Factor
E = % Solids/100
F = Final Volume (0.100 L)

Signature: _____

Name & Title: BBC: IGWR CMOE Date: 6/20/07

SDG NARRATIVE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: Sentinel, Inc. SOW No.: ILM05.4 Contract: EPW06059

Lab Code: SENTIN Case No.: 36456 NRAS No.: SDG No.: MC0007

EQUATIONS:

DW2 Method: CN Concentration (µg/L) = (A x D x F)/ B

WHERE, A = µg/L CN of sample from regression analysis
B = volume of original sample for distillation (0.050 L)
D = any dilution factor necessary to bracket sample values within standard values
F = sample receiving solution volume (0.050 L)

DS2 Method: CN Concentration (mg/kg) = (A x D x F)/ (B x E)

WHERE, A = µg/L CN of sample from regression analysis
B = wet weight of original sample (g)
D = any dilution factor necessary to bracket sample values within standard values
E = % solids/100
F = sample receiving solution volume (0.050 L)

HW2 Method: Concentration (µg/L) = C x (V_f/V_i) x (V_f/20) x DF

WHERE, C_i = Instrument value in µg/L (The average of all replicate integrations).
V_f = Final digestion volume (50 mL)
V_i = Initial digestion volume (100 mL)
DF = Dilution Factor

HW3 Method: Concentration (µg/L) = C x (V_f/V_i) x DF

WHERE, C = Instrument value in µg/L (The average of all replicate integrations).
V_f = Final digestion volume (mL)
V_i = Initial digestion volume (mL)
DF = Dilution Factor

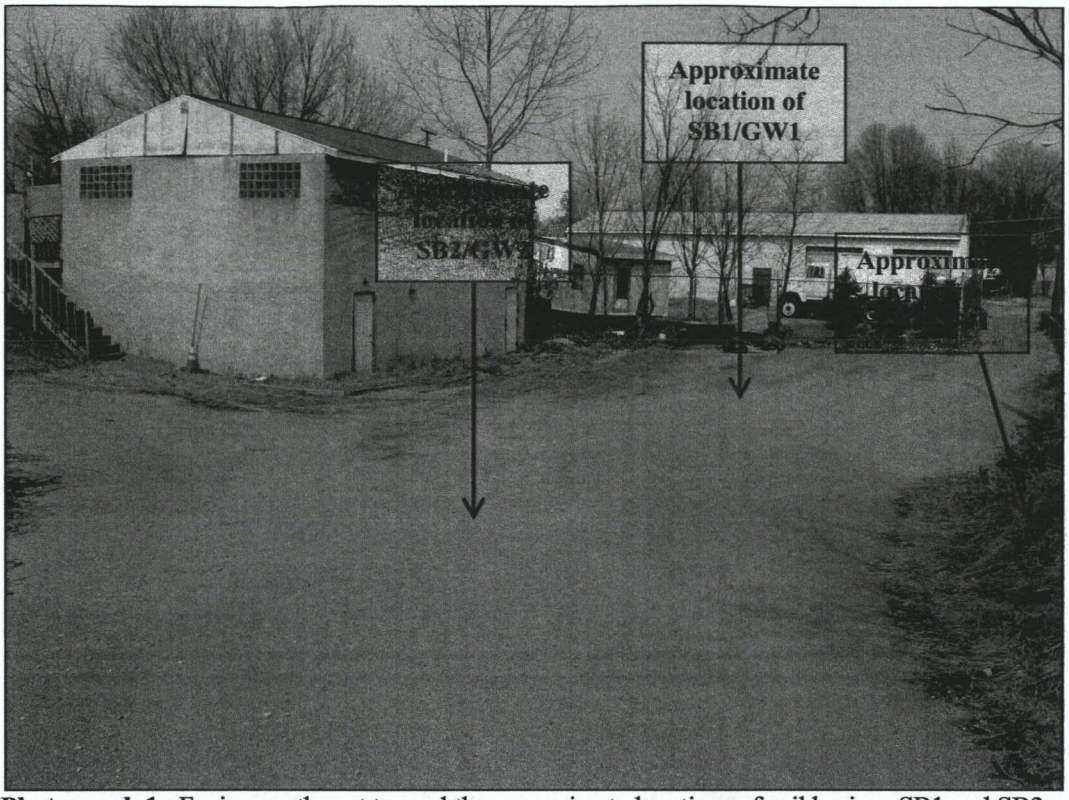
Signature: _____

Name & Title: _____ Date: 6/20/07

4

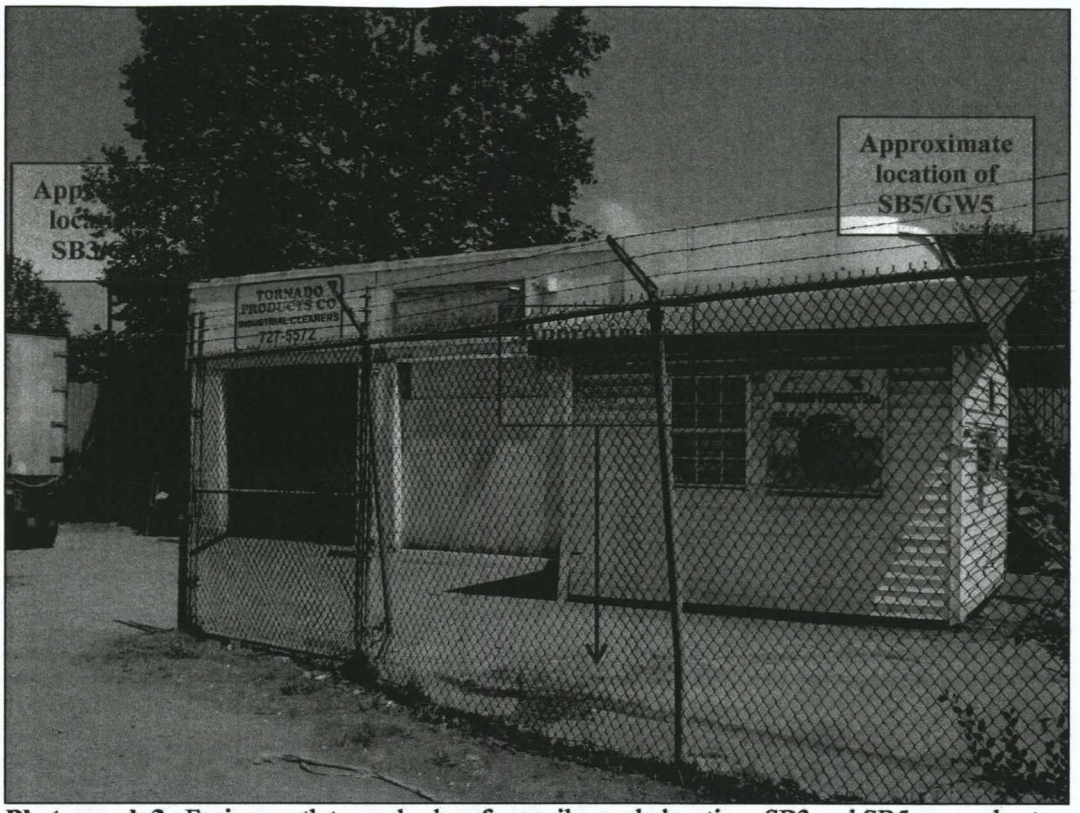
Appendix 3,

Site Photographs



Photograph 1. Facing northwest toward the approximate locations of soil borings SB1 and SB2, groundwater samples GW1 and GW2, and surface soil samples SS10 and SS11.

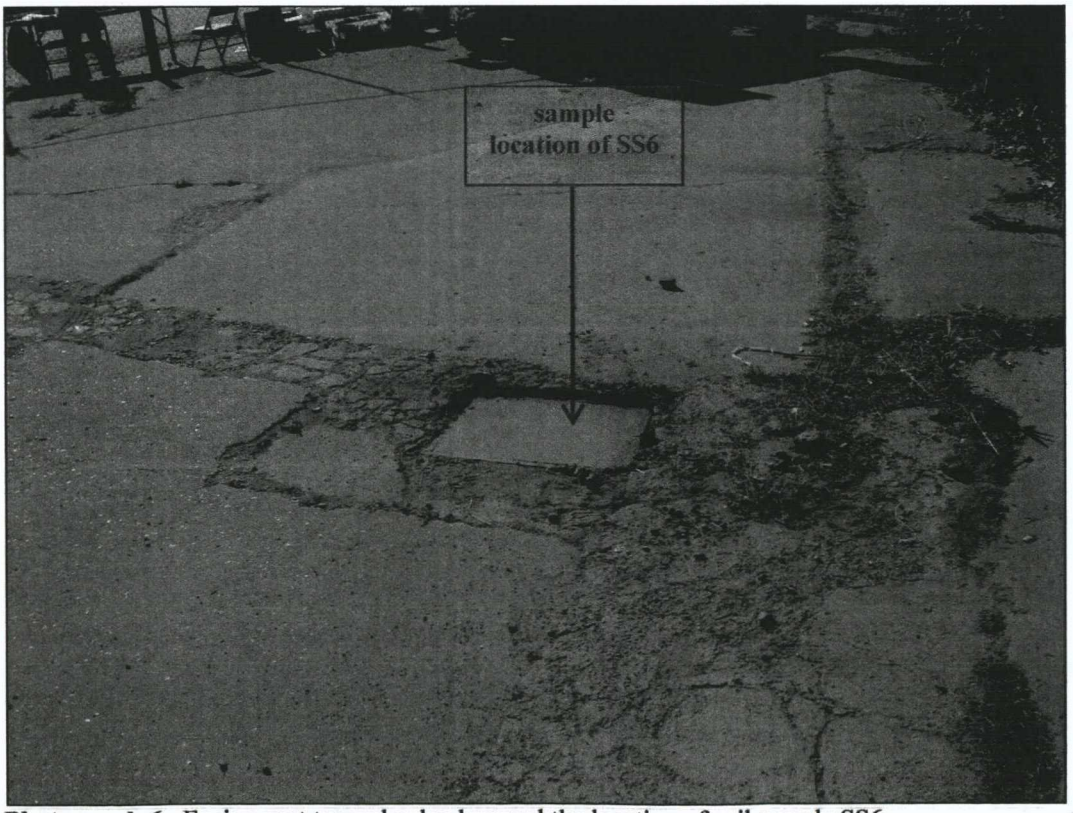
Photograph 2. Facing northeast toward surface soil samples SS10 and SS11, located on the western side of the facility building.



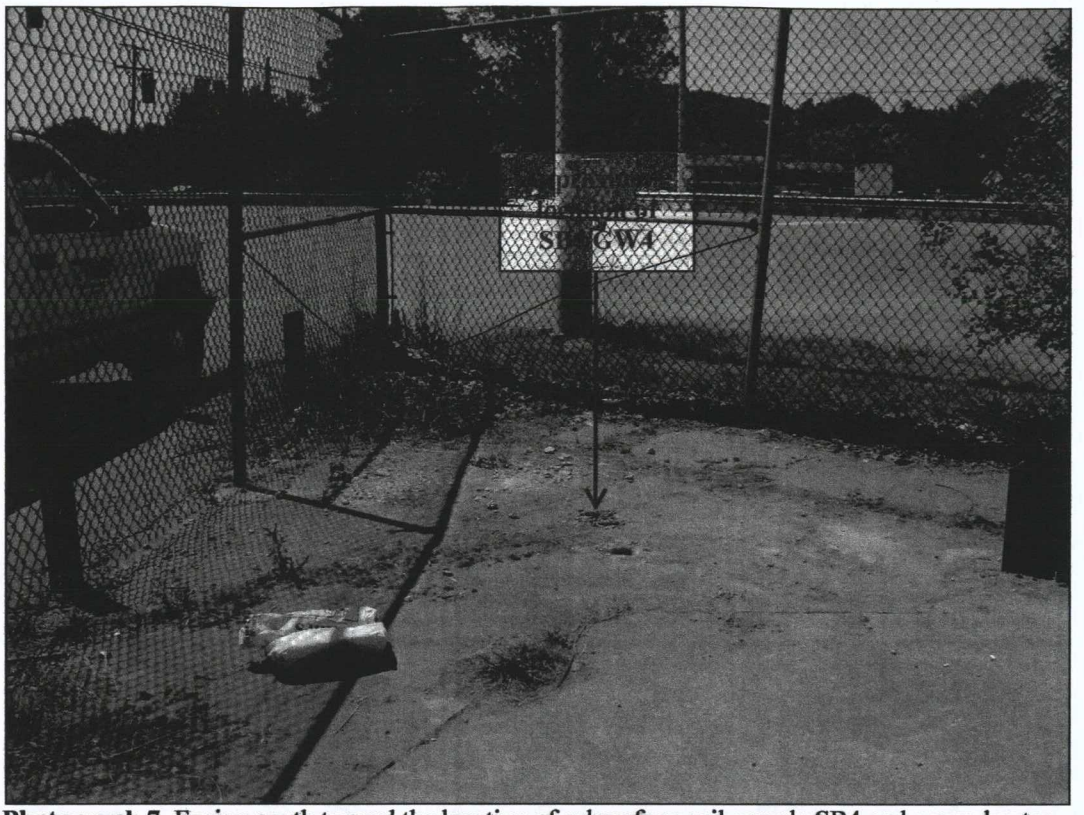
Photograph 3. Facing north toward subsurface soil sample locations SB3 and SB5, groundwater sample locations GW3 and GW5, and surface soil sample SS6.

Photograph 4. Facing west toward surface soil samples SS4 and SS5, subsurface soil sample SB3, and groundwater sample GW3.

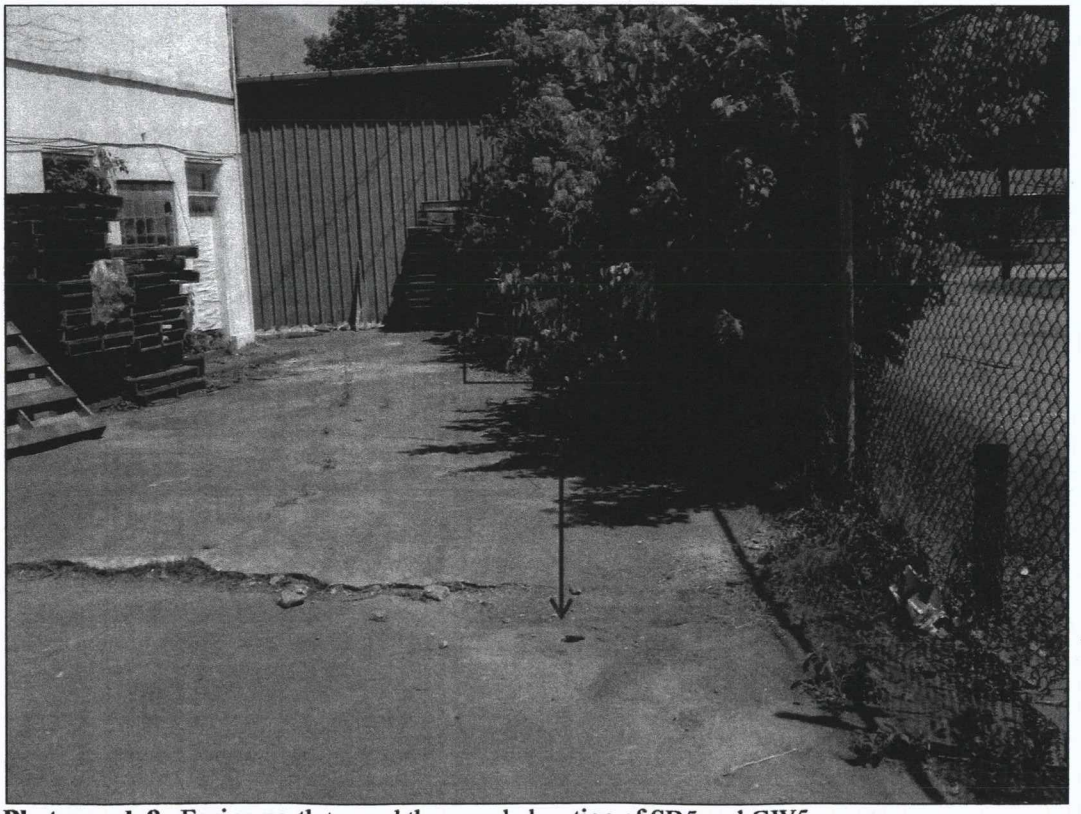
Photograph 5. Facing east toward surface soil sample locations SS2 and SS3.



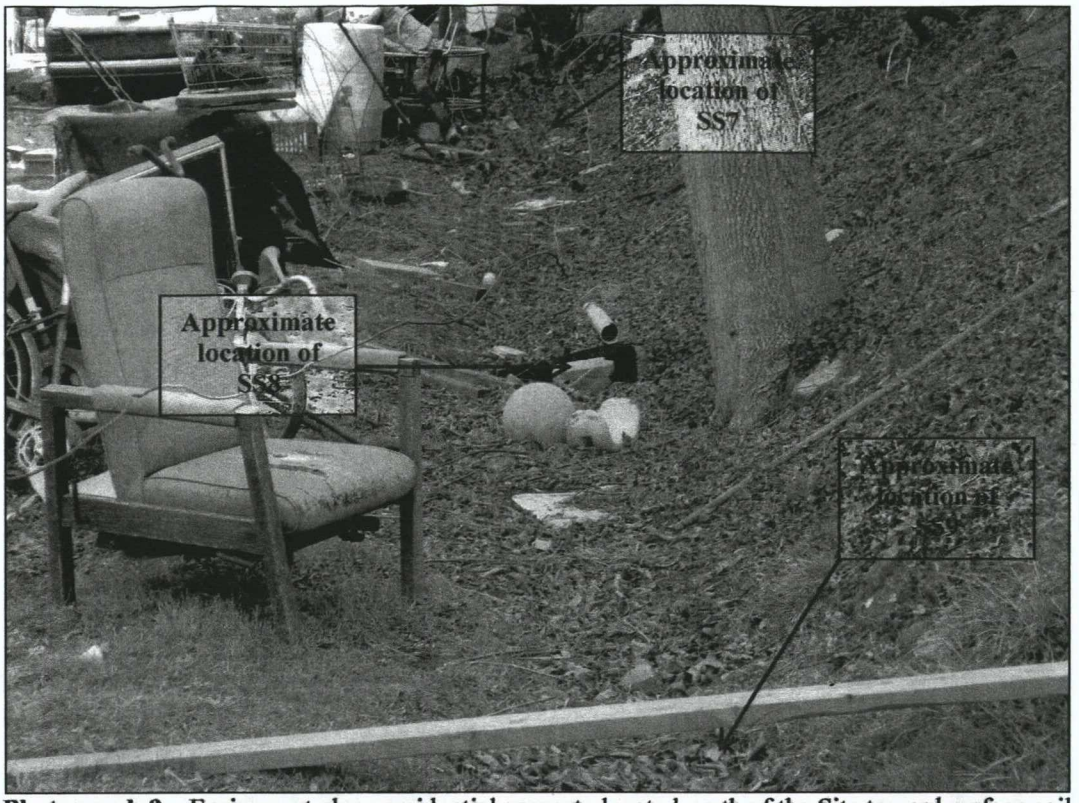
Photograph 6. Facing east toward valve box and the location of soil sample SS6.



Photograph 7. Facing south toward the location of subsurface soil sample SB4 and groundwater sample GW4 in the approximate location of the former UST pit.



Photograph 8. Facing north toward the sample location of SB5 and GW5.



Photograph 9. Facing east along residential property located north of the Site toward surface soil sample locations of SS7, SS8 and SS9.

Photograph 10. Facing south toward the location of surface soil sample SS8 located on the residential property north of the Site.